

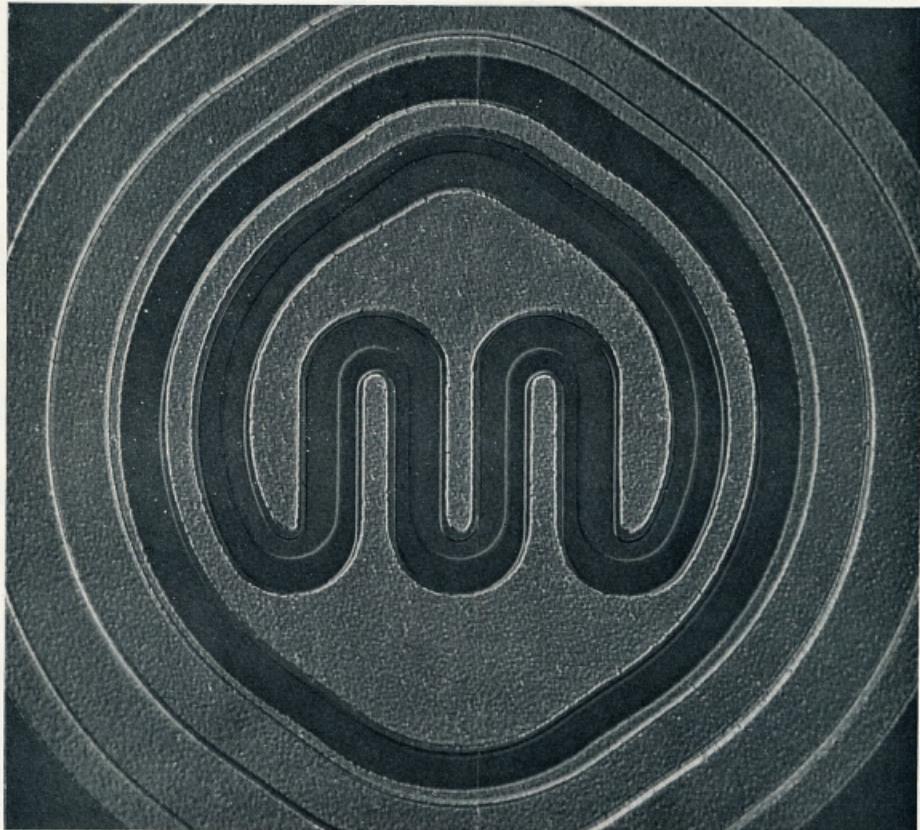
amateur radio

Vol. 37, No. 5

MAY, 1969

Registered at G.P.O., Melbourne, for
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amateur radio

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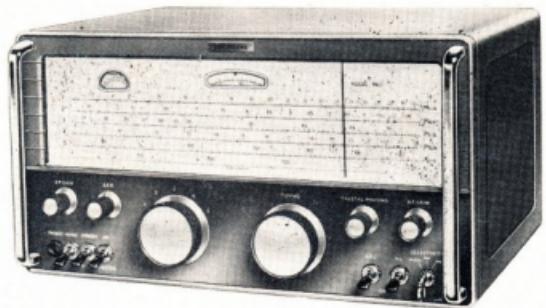
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VHF COMMUNICATIONS, the International Edition, printed in English, of the well established German Publication UKW-BERICHE, is an Amateur Radio magazine catering especially for the VHF, UHF and Microwave enthusiast.

VHF COMMUNICATIONS will follow the same path as UKW-BERICHE, by specialising in the publication of exact and extensive assembly instructions for VHF, UHF and Microwave transmitters, receivers, converters, transceivers, antennas, measuring equipment and accessories, which can be easily duplicated. The latest advances in semiconductors, printed circuits and electronic technology are described in great detail. For most articles, all the special components required for the assembly of the described equipment, such as epoxy printed circuit boards, trimmers, coil formers, as well as metal parts and complete kits will be available from the Australasian Representative.

VHF COMMUNICATIONS also features information regarding the development of electronic equipment, measuring methods, as well as technical reports covering new techniques, new components and new equipment for the Amateur.

VHF COMMUNICATIONS is a quarterly, published in February, May, August and November. Each edition contains roughly sixty pages of technical information and articles.

VHF COMMUNICATIONS' subscription rate (air mailed direct from the publisher) is \$5.50 per year. Every copy is dispatched in a sealed envelope to ensure that it arrives in perfect condition.

Some copies of the German edition UKW Berichte are available free for perusal. Subscriptions, either cheque or money order/postal note should be forwarded to the Australasian Representative, Mr. Gordon Clarke, 2 Beaconview St., Balgowlah, N.S.W., 2093, Australia.



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ZEITSCHRIFT FÜR DEN VHF-UHF-AMATEUR
ULTRAKURZWELLEN UND DEZIMETERWELLE TECHNIK

Mullard Special Quality Valves

for Industrial Applications

This chart enables you to identify at a glance the Mullard Special Quality Valve equivalents of C.V. Services Types, American Types and Mullard Standard Types. In addition abridged

data is provided to assist in the selection of the Special Quality Valve most suited to your specific circuit requirements. Further information is available on request.

SPECIAL QUALITY PRODUCTION			DESCRIPTION	STANDARD PRODUCTION		
Mullard Type Number	Services Type Number	American Type Number		Mullard Type Number	Services Type Number	American Type Number
E55L	CV5086	8233	High slope wideband output pentode	—	—	—
E80CC	CV5969	6085	Double triode for industrial use	—	—	—
E80CF	—	7643	Triode pentode with separate cathodes	ECF80	CV5215	6BL8
E80F	CV2729	6084	Voltage amplifying pentode	—	—	—
E80L	—	6227	Output pentode	—	—	—
E81L	—	6686	Output pentode	—	—	—
E83F	—	6689	Voltage amplifying pentode	—	—	—
E84C	—	—	U.H.F. triode	EC86	—	6CM4
E88C	—	—	U.H.F. grounded grid triode	EC88	—	6DL4
E88CC	CV2492	6922	Double triode for use in computers and cascode circuits	ECC88	CV5358	6DJ8
E88CC/01	CV2493	—	Double triode for use in computers and cascode circuits	—	—	—
E90CC	CV5214	5920	Double triode for use in computers	—	—	—
E91H	—	6687	Dual control heptode for use as a gating valve	—	—	—
E92CC	—	—	Double triode for use in computers	—	—	—
E180CC	CV8431	7062	Double triode for use in computers	—	—	—
E180F	CV3998	6688	High slope wideband amplifying R.F. pentode	—	—	—
E182CC	CV5766	7119	Double triode for use in computers	—	—	—
E186F	—	7737	High slope wideband amplifying R.F. pentode	—	—	—
E188CC	CV5354	7308	Double triode for use as cascode amplifier	—	—	—
E280F	—	7722	High slope wideband amplifying R.F. pentode	—	—	—
E288CC	—	—	Double triode	—	—	—
E810F	CV5809	7788	High slope wideband amplifying pentode	—	—	—
EC1000	—	8254	Subminiature triode for use in measurement probes	—	—	—
EC2000	—	—	Double triode for use as V.H.F. cascode amplifier	—	—	—
M8079	CV4025	6068	Double diode with separate cathodes	EB91	CV140	—
M8080	CV4058	6100.6C4WA	R.F. power triode	EC90	CV133	6C4
M8081	CV4031	6101.6J6WA	V.H.F. double triode with common cathode	ECC91	CV858	6J6
M8082	CV4063	6516	Output pentode	EL91	CV136	—
M8083	CV4014	6064	R.F. pentode with separate g3	EF91	CV138	—
M8091	CV4044	6443	Half-wave rectifier designed for operation at high altitudes	—	—	—
M8096	CV4039	6062	V.H.F. power tetrode	QV03-12	CV2129	5763
M8097	CV4059	—	Low impedance diode with medium μ triode	EAC91	CV137	—
M8099	CV4070	—	Triode for use as grounded grid amplifier	EC91	CV417	—
M8100	CV4010	15654/6AK5W/6096	Low noise, R.F. pentode	EF95	CV850	6AK5
M8136	CV4003	6189/12AU7WA	Low μ double triode	ECC82	CV491	12AU7
M8137	CV4004	6057	High μ double triode	ECC83	CV492	12AX7
M8161	CV4015	6065	Variable μ R.F. pentode	EF92	CV131	—
M8162	CV4024	12AT7WA	Medium μ double triode	ECC81	CV455	12AT7
M8195	CV4085	—	Low microphony, low hum A.F. voltage amplifying pentode	EF86	CV2901	—
M8196	CV4011	15T25/6AS6W	Dual control pentode	6AS6	CV2522	6AS6
M8212	CV4007	5T26/6AL5W/6097	Double diode with separate cathodes	6ALS	CV283	6ALS
M8246	CV5311	64JWA	U.H.F. grounded grid triode	EC96	—	634

The American types shown in this chart have the same electrical characteristics as the appropriate Mullard Special Quality type and they may, in general, be regarded as interchangeable. In the case of those types marked \dagger there are, however, certain differences in the test specifications.

Mullard

Mullard-Australia Pty. Ltd.

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- NUVISTOR FRONT END
- TRIPLE CONVERSION RECEIVER
- NOISE LIMITER
- A.C.-D.C. OPERATION
- INBUILT POWER SUPPLY

SPECIFICATIONS:

RECEIVER
Frequency Range: 144-148 Mc AM
Sensitivity: 1 microvolt for 10dB

Image Ratio: 50 dB at 145.5 Mc
IF Frequency: 1st IF 44.45 Mc

Noise Limiting: Automatic

Squelch: 1 microV-300 microV

Selectivity: 20 dB down at 10Kc

Audio Output: 3W 8 ohms

Input Impedance: 50 ohms (Unbalanced)

TRANSMITTER

Frequency Range: 144-148 Mc AM

Power Input to Final: 22 to 26 Watts

RF Output Power: 10W 144-146 Mc

AC 240V Operation

9W 144-146 Mc

DC 12.8V Operation

Crystal Type: FT-243

Crystal Frequency: 8-8.222 Mc

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Frequency Response: -3 dB at 300 and 3,000 c/s

Output Impedance: 50-100 ohms w/Coaxial Connector

POWER SUPPLY

AC Operation: 117/230V 60/50 c/s

Receiving Power Drain

106 VA

Transmit Power Drain

146 VA

DC Operation: DC 12.8V (12/14V)

Receiving Power Drain

98 VA

Transmit Power Drain

120 VA

DC Operation: DC 12.8V (12/14V)

Receiving Power Drain

98 VA

Transmit Power Drain

120 VA

Tubes and Transistors used: 16 Tubes

1 Nuvistor, 8 Diodes, 4 Power Transistors

Dimensions: H: 6 5/8"; W: 11 1/8"; D: 12 3/8"

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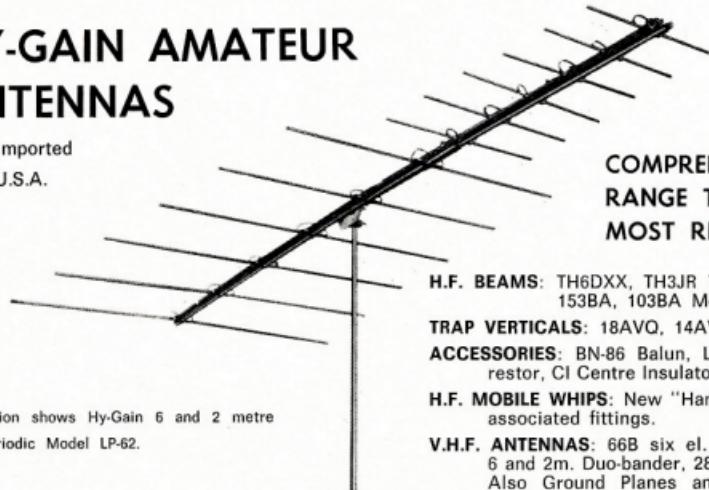
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Log Periodic Model LP-62.

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FEDERAL COMMENT

By JOHN B. BATTRICK, VK3OR, *Immediate Past Federal President, W.I.A.*

I wrote this "comment" after returning from the 33rd Annual Federal Convention held last month in Canberra. This will be my last comment as I have asked Federal Council to accept my retirement from Executive due to pressure of business and for personal reasons. I announced this fact at the commencement of proceedings at the Convention, which left Federal Council the additional problem of a replacement for the office of Federal President.

However, it did allow for discussion among Federal Councillors and towards the end of the Convention, Federal Council, by unanimous decision, appointed David Wardlaw (VK3ADW) to fill the vacant position on Executive, Michael Owen (VK3KI) to the position of Federal President, and David Rankin (VK3QV) to the position of Federal Vice-President. I was appointed for a further term as the W.I.A. Director I.A.R.U. Region III. Association—for which I am grateful as it will allow me to continue to serve W.I.A. and Amateur Radio in an important area of activity, but without the stress attaching to the office of W.I.A. Federal President.

Personally I am very pleased with the decisions of Federal Council to appoint two such young and experienced men to the positions of President and Vice-President. This is, in any organisation, a rare combination—youth and experience. David VK3QV is well known as a long-standing member of Executive. His activities on v.h.f. bands and 10 metres, his competent management of W.I.A. Federal Activities (contests, etc.), his valuable assistance given to set up the Region III, inaugural congress, his contact with overseas Amateur Societies on a personal basis, his attendance at many Federal Conventions—all bring a valuable background of experience to his office. He will continue his work as Federal Activities officer in his new position.

The new Federal President, Michael VK3KI, is also a well known worker for Amateur Radio and the W.I.A. Over the past six or seven years he has been a tireless and determined officer in both Divisional and Federal matters. I say determined only because there are

times when the pressing of matters clearly aimed at improving the W.I.A. organisation and our hobby has needed a forthright approach to the problems. This has been supplied and such things as the new Handbook, with its liberal operating and licensing provisions, the detailed work on the new Federal Constitution, the development and planning of the W.I.C.E.N. network in VK3, the detailed drafting of the interim constitution for the Region III, I.A.R.U. Association, the active attendance at many Federal Conventions, the recent achievements with regard to v.h.f. repeater/translators, show the results of his energetic and forthright approach.



JOHN B. BATTRICK, VK3OR,
Immediate Past Federal President, W.I.A.

A very high degree of personal rapport has been established between the officers of P.M.G. Central Office and our new Federal President over recent years. He still finds time to operate his radio equipment and to be active on v.h.f. f.m. nets (he was as a matter of interest, one of the first to operate equipment on 145.854 Mc. f.m., from which has grown the present net frequency system).

I put these points before you to indicate that Federal Council in its unanimous decision to appoint Michael and David to these high positions in our society recognises, no doubt, the value of youth when allied to such a wide and deep experience. Such people are rare and their expertise a "must" in

any organisation. They will be ably supported by Peter Williams (VK3IZ) as Federal Secretary—also a long-standing co-worker with Michael and David, and a tireless administrator (or we hope he is tireless, hi). This point I may pick up—we all accept hard work, we all give our time as we can to help the W.I.A.—but stress none of us needs in this busy world of today.

The recent "Federal" Convention in Canberra was one of the most significant for many years. The fact that all the delegates and members of Executive present were housed together in the one centre which also contained the conference room allowed for many free exchanges of views both at the conference table and in the periods between formal sessions. As a result, many differences of opinion were explored, compromise reached, and stress reduced.

These areas in which compromise can be reached, that is, where some solution acceptable to all is possible from an initial position of difference, is one of the easiest areas for Executive to carry out. Easiest because the instructions stem from unanimity. However, many areas in which F.E. is required to execute some direction from Federal Council are less easy because instructions stem from majority decisions. Executive must, by virtue of our society procedures and rules, in these areas, proceed in a manner consistent with the views of the majority, however keeping also in mind the views of a minority. A deeper realisation of the difficulties inherent in this latter activity have resulted from the first convention in our "Federal Capital".

I hope you will all give your new Executive your wholehearted support during its coming year—I believe you have a vigorous and talented Executive with youthful and experienced leaders. As I said before, a rare combination. They have much to do for you (61 motions and motions arising were dealt with at the Canberra Convention between midday Friday and midnight Sunday). I commend them to you and thank them for carrying on from where I unfortunately had to leave off.

NEW IDEAS ON AMATEUR TELEVISION

PART TWO

GRAHAME WILSON,* VK2ZGW/1

As you have probably realised by now, Amateur Television offers a unique and challenging opportunity for the Amateur to try out his ingenuity, but there is a definite method of tackling Amateur Television so as to avoid as many problems as possible.

Firstly, if possible, you should join an ATV group or contact people involved in ATV so as to gain as much experience as possible. Many Amateurs have had experience in television and can give you a great deal of assistance.

Secondly, Amateur Television is quite different from Amateur Radio and so is the test equipment used. It is most essential that you have access to certain pieces of test equipment or you will be working in the dark—remember, television works on pulses, not on sine waves. Once again, group effort in pooling test equipment is about the best method. The most important piece of test equipment is the c.r.o., followed closely by the multimeter and signal generator.

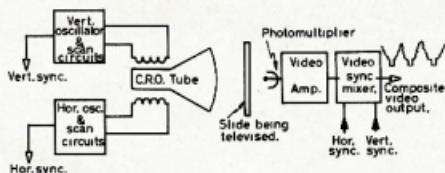


FIG.1 THE FLYING SPOT SCANNER (Simplified block diagram)

Thirdly, you should plan your projects well ahead of construction, show your circuit diagrams to other ATVers for constructive criticism. Basic individual circuits should be built as prototypes and their performances noted before you build any major projects as this will avoid those nagging faults that always seem to follow a bad design. I will be giving you further hints on design later in the series.

The circuits used in television, or for that matter, any electronic circuitry, are built up of basic circuit functions and if you understand these functions you will not be restricted to one design but may modify it to your own needs. It is, therefore, necessary to get your basic television circuit theory off pat.

Fourthly, do not rush in to ATV and expect results immediately, start slowly and build up your equipment, such that each section is of known reliability and when connected to the "system" you know that it will work. This is a much better approach in the long run.

Throughout this series of articles my approach to the subject will be of more to giving information and ideas rather than describing projects that follow a rather rigid line of circuitry and construction. There are several reasons for this. Firstly, it would mean a great

deal of developmental work on my part to produce designs that everyone can construct without difficulty, and secondly the requirements of different Amateurs will vary greatly according to their needs and the parts they have available.

If you would like to follow a series of articles on construction of ATV equipment try and obtain copies of "A.R." March to November 1958. This series of articles was magnificently developed by E. Cornelius, VK6EC/T, and the equipment described is quite suitable for use today as it was designed around C.C.I.R. standards that the television services comply with. Considering the time the series was written it would probably be safe to say that the articles would class as one of the "classics" of "Amateur Radio," the work put into this series must have been phenomenal. All I can say is if you can get hold of the series, read it!

As this article is the second in the series I will not have time to describe

transparencies) can be televised. The still camera consists of what is known as a flying spot scanner, this is a simple device in which a c.r.o. tube is scanned so as to produce a raster. The light from this raster is then focused through a film negative onto a photomultiplier which picks up the signal and amplifies it. Synchronising pulses from the oscillators in the scanning coils are added to the output of the photomultiplier so as the video is synchronised (known as composite video).

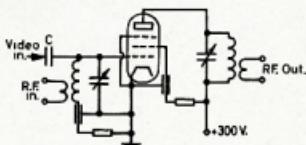


FIG.2a. GRID MODULATION.

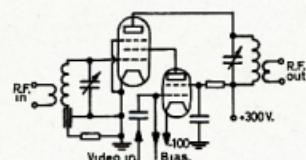


FIG.2b. SCREEN MODULATION.

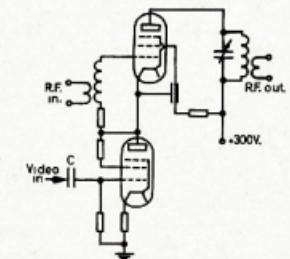


FIG.2c. SERIES (Cascode) MODULATION.

"C" - Very large.

Note - These circuits are illustrative only.



I will describe the operation of the live camera in my next article.

The next and last section of the ATV station is the transmitter and modulator. In many respects a video transmitter is the same as an audio one, the main difference being the bandwidth of the transmitter. In order to obtain bandwidths in the order of about 5 Mc., a different approach to modulating has to be taken, the use of reactive transformers is out and one has to adopt a completely different method. This is quite easily done by coupling

(Continued on Page 15)

* 31 Ada Street, Katoomba, N.S.W., 2780.

A FIELD-DAY TRANSMITTER

T. MITCHELL,* VK3EZ (Ex VK5TH)

• This article is intended to encourage building for and participating in the National Field Day Contest. The transmitter has been proved in service as reliable communications with Eastern U.S.A., Canada and New Zealand have been successful.

In designing this 15-watt transmitter, my original intention was to build a transceiver. The space now occupied by the power supply and sidetone amplifier was to be used for a two-band transistorised receiver. Terminal TSB-3 was the receiver 12 volt supply. Having bought the EC10 receiver, the inducement to continue the in-built receiver ceased.

Some points of interest are:

means less inter-circuit wiring. No microphone press-to-talk switch is necessary.

3. Keying

Screen grid keying is quite effective in this transmitter. In conjunction with crystal control and a regulated h.t. oscillator supply, and noting the very small keyed screen grid current (0.7 mA.), the transmitter output is clean, chirpless and free of key clicks. The disadvantage, of course, is that the

THIS description of a self-contained 40 and 80 metre transmitter is intended to encourage some of our younger Amateurs to take an interest in portable operations and, in particular, to participate in Field Day Contests. As VK5TH/P and VK3EZ/P, I have enjoyed several Field Day Contests, starting with unsophisticated rigs, but year by year improving my gear.

In 1968 I used the transmitter described here in conjunction with a Super Pro receiver using dry batteries, for high tension. For the 1969 Contest I was in the field using this transmitter in conjunction with an Eddystone EC10 (transistorised) communications receiver. Voltage for the transmitter was obtained from the automobile cigarette lighter via a special plug which is available for about 60 cents.

Whatever the rig, crude or sophisticated, the John Moyle Memorial National Field Day Contest is, for me, the most important day in the Amateur Calendar. There is no more enjoyable experience than operating under field conditions, using equipment built, modified or improvised for the occasion.

* 91 Roslyn Street, Burwood, Vic., 3125.



1. Portability and Cost

The cabinet, sidetone speaker, C14, C15, TR/1 and several other components were purchased quite cheaply from city disposal houses.

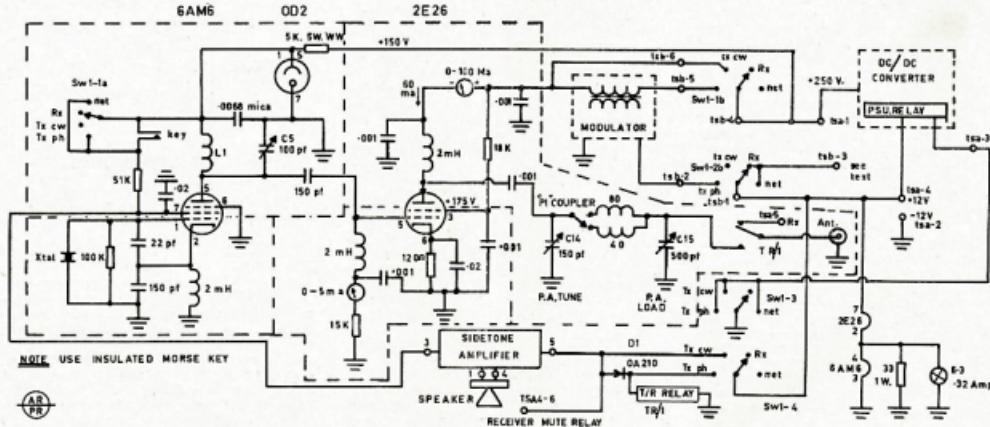
2. Single-Switch Operation

See circuit diagram and note the separate meters for monitoring power amplifier grid and plate current. The space taken by a small meter is no larger than necessary to accommodate a switch, and having separate meters

Morse key is at +150 volts potential. However, insulated keys are available at disposals houses at about 50 cents.

4. G.W. Monitor (Sidetone)

As a keen c.w. operator, I insist on a keying monitor. I do not like using a transistorised receiver for monitoring signals. It is far better to switch off the receiver whilst transmitting. Most



FIELD DAY TRANSMITTER

circuits previously published have used r.f. power as a voltage source for the monitor. However, I consider that with the low r.f. power available, adjustment of coupling could be tricky.

My circuit uses the oscillator keyed screen supply as a voltage source for the multivibrator transistors in the sidetone unit. Although this does not prove that the transmitter is actually radiating, it provides a faithful reproduction of the operator's keying characteristics. The 12-volt supply is used for the sidetone output circuit. Diode D1 prevents sidetone operation when switched to "transmit phone".

5. Stability

With crystal control, regulated high tension supply for the oscillator, and proper screening, stability is as good as many fixed station transmitters. The broken lines on the circuit diagram in conjunction with the photographs show clearly the screening. Note that the oscillator tube is mounted above the chassis to provide further isolation between oscillator plate and grid circuits.

6. Minimum Operating Controls

Careful consideration was given to this aspect and the circuitry provides single switch operation for four functions. The oscillator plate circuit tuning capacitor C5 tunes 40 metres at near minimum and 80 metres at near maximum. 80 or 40 metre crystals can be used for 40 metre operation. The EF91 (6AM6) is a well screened tube and operation on the fundamental crystal frequency is satisfactory.

7. Phone Operation

The modulator is based on an article entitled "Modulator Design with OC26 Transistors" in Mullard "Outlook" for May-June 1960, modified in the March-April 1962 edition.

8. Coil Data

Oscillator plate coil L1—

25 turns of 30 gauge enamelled wire on a 1" diameter former, turns removed to tune 80 and 40 metres at near extremities of C5.

80 metre final tank coil—

21 turns of 24 gauge wire on a 1½" diameter former, double spaced.

40 metre final tank coil—

13 turns of 24 gauge wire on the same 1½" diameter former, double spaced.

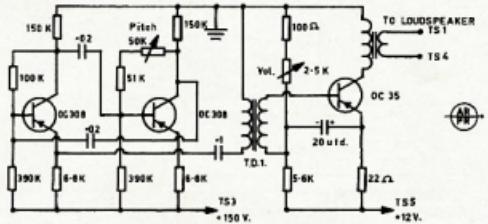
GETTING LAST BIT OF POWER FROM A.W.A. MR3 CARPHONE

BY MAX HEPNER, VK3ZQY

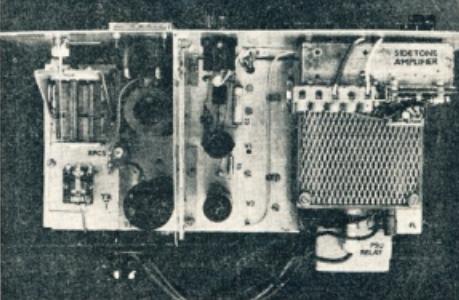
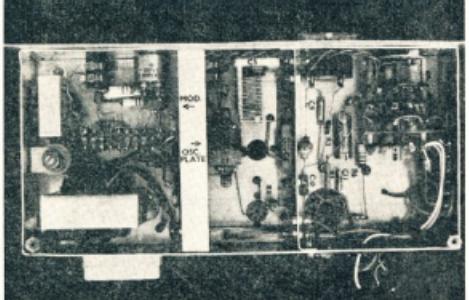
If you measure the voltage drop across the metering resistor in the p.a. anode of your MR3 (and I suppose other units also) you will find a drop of about 8 volts across this 100 ohm resistor which means that about ½ watt is being dissipated as heat.

To make this ½ watt of power work, short out this resistor by applying a short to your metering plug and leave it plugged permanently into the p.a. anode metering socket.

—Max Hepner, VK3ZQY.



SIDETONE OSCILLATOR AND AMPLIFIER



1969 U.S.S.R. DX CONTEST

RULES FOR C.W. SECTION

Date: 09 GMT, May 3, to 21 GMT, May 4. Object: To work as many stations as possible both in the U.S.S.R. and in other countries.

Exchange: RST plus three-figure serial number starting from 001.

Scoring: Each contact is worth 3 points. Contacts with the same country count 0 points, but can be counted as a multiplier. The multiplier will be equal to the total number of countries worked, regardless of the band. Final score equals sum of QSO points from all bands multiplied by number of countries worked.

Scoring will be for a minimum of 12 hours. Submit the complete log, but mark the 12-hour period you wish to be entered for and score only this period. Mail the log within 15 days to C.R.C., P.O. Box 88, Moscow D-362, U.S.S.R.

YL INTERNATIONAL S.S.B'ERS

1969 QSO PARTY

Beginning 0000 GMT, 24th May, through 2400 C.W. 25th May, 1969, both phone and c.w. S.S.b'ers have many c.w. only members so all bands will be monitored. The new c.w. only plaque will be awarded for world high c.w. score. The QSO Party is in three categories, non members are welcome as all Radio Amateur awards are supported.

Categories: YL/OM, YL/W, YL/OM teams, 2-YL/OM teams, 3-single operator.

Exchange: RST, s.s.b. number, state, country, or VE/VO province, partner's call. If no partner, leave blank. If no non-member, send "no number" and state that is optional.

Suggested Frequencies: Phone minus 5, 10, 15 Kc, as QRM dictates. Phone—3673, 7273, 14323, 21373. DX may transmit on 3773, 7090, 1432, 3565, 7065, 14670, 21070, 28070. D/WK, Fender, etc. Team must consist of two or more YLs. Operation is the sum of both partners' scores and determined when both logs are received.

YL/OM teams: Each team consists of one YL member and one OM whose wife are related, i.e. husband and wife, father-daughter, mother-son, brother-sister. Operation must be from same QTH using same rig and his or her own call.

Single operator category: Non members will be entered in this category.

Logs: Must show GMT date, GMT time, RST sent and received; his state, VE/VO province, or country; s.s.b.'ers number, partner's call, or bands and mode of operation. Logs must show six hours of hours in each band for each team operation and each team member must show at least six hours of operation during the party. To qualify for the single operator world-high combined score trophy, logs must show at least six hours of operation in each mode, c.w. and s.s.b.

Conditions: The same stations may be contacted for additional contact points on different bands and modes, but NOT for additional multipliers. All operations will be with one transmitter and receiver. If using a relay, the receiver only. Any difficulty not covered by these QSO Party rules will be decided by the YL Int'l S.S.B'ers Executive Council for maximum pleasure to all participants.

Logs go to Woody Bennett, W0GNX, 8939 E. 31st Street, Kansas City, Missouri, 64129, U.S.A.

PROJECT—SOLID STATE TRANSCEIVER

PART SEVEN

H. L. HEPBURN,* VK3AFQ, and K. C. NISBET,† VK3AKK

THIS month's article will deal with the cabinet for the complete transceiver and give an abridged lining up method for the receiver. It was originally intended to describe the transmitter p.a. in this article but—to judge from correspondence—the majority of participants preferred to have cabinet and receiver line-up information first. The p.a. article will thus appear next month.

THE CABINET

An exploded view of the cabinet is given in Fig. 21, from which it can be seen that it consists basically of a "U" shaped chassis tray to which back and front panels are attached. Unperforated top and bottom covers, slightly wider than the depth of the cabinet, follow the rounded corners of the panels and attach to the vertical sides of the central tray.

Fig. 18 gives the front panel layout, the central item being the Eddystone Type 898 dial, with all other controls

steel. The top and bottom covers are of 20 gauge steel. All parts are fully drilled, cadmium plated, passivated and the exterior parts sprayed.

Those who wish to make a smaller cabinet to suit their own end requirements will undoubtedly do so. It is to be hoped they may get a few ideas from these notes.

As an example of the degree of "compression" that can be achieved, it is worth mentioning that one of the authors (VK3AKK), using standard project boards and a smaller (but less satisfactory) dial, has made a three-band transceiver that fits into the glove box of his Kombi station wagon.

RECEIVER ALIGNMENT

This part of the article will make frequent reference to coils, trimmers, etc., and the reader is advised to have before him the six previous articles in this series, i.e. the November and December 1968, and the January, February, March and April issues of "A.R."

The reference numbers (of coils especially) are those used in the previous articles.

It is assumed that a good signal generator is available to do the lining up of the receiver. By "good" is meant a s.g. with a reliable attenuator. It is not recommended that use be made of the cheaper types whose leakage alone may be in excess of tens of microvolts.

With one exception, Figs. 14 and 15 in the March 1969 issue of "A.R." gave the d.c. and signal interconnections for the modules making up the receiver part of the project. The exception was the filter pre-amplifier. When on receive this module takes its h.t. feed from the a.g.c. line through a diode, and should be so connected in carrying out the commissioning procedure.

Rather than put all modules into their final case or cabinet, it is strongly recommended that they first be mounted on to a metal plate (aluminium for preference) about 18" and 12", using the layout given in Fig. 19. The voltage regulator board, the 0-1 mA. "S" meter and the b.f.o./prod. det. box can be wired "outboard". This procedure is recommended in order to make simple the removal and checking of any individual board should this be necessary.

It is also suggested that the various switches are not wired into circuit and that connections to the desired sections of the circuit be made using temporary leads. In this way it is possible to commission one band at a time and be sure it is operational before going through the time consuming process of wiring up, say, the bandswitch, and then perhaps having to disconnect when a problem turns up somewhere.

These general remarks apply not only to the bandswitch but to functional

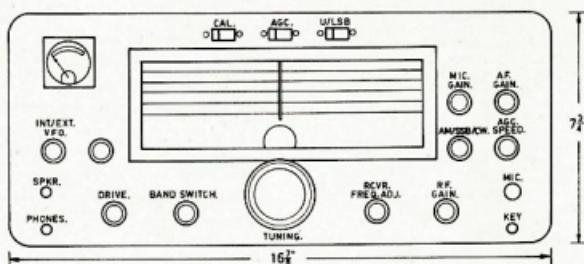


FIG. 18. FRONT PANEL LAYOUT.

and inlet sockets being symmetrically grouped round it.

Not shown is the rear panel which carries signal and power connections for external crystal or v.f.o. control, the antenna input socket, the power input socket and provision for future vox controls.

Figs. 19 and 20 give the layout of the various printed circuit boards and die cast boxes on respectively the top and under sides of the main chassis tray.

No attempt has been made to miniaturise the case, it being felt more important that there should be plenty of working space for both the initial interwiring and subsequent adjustment procedures. A bonus to this line of reasoning is that plenty of room is available for the future addition of extra bands, converters, calibrators, vox, two-tone test oscillators and other similar accessories.

The cabinet made for the project (and mentioned later under "Availability") has a chassis tray made of 16 gauge steel, a back panel of the same gauge and a front panel of 14 gauge

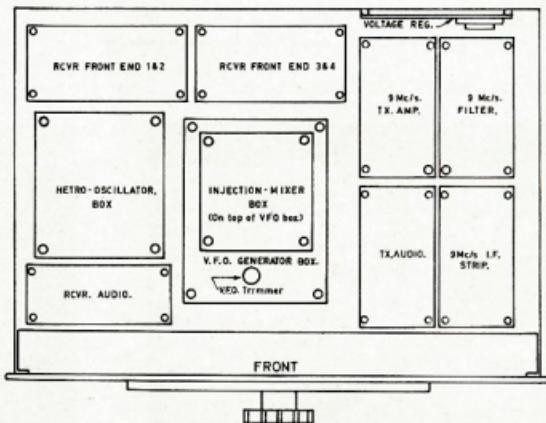


FIG. 19. ABOVE CHASSIS VIEW.

* 4 Elizabeth Street, East Brighton, Vic., 3187.
† 25 Thames Avenue, Springvale, Vic., 3171.

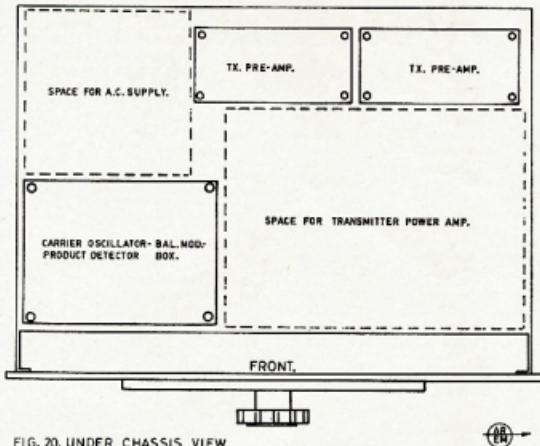


FIG. 20. UNDER CHASSIS VIEW.

switching such as a.g.c. speed, upper and lower sideband, a.m./c.w./s.s.b., etc.

To further simplify commissioning, it is recommended that no relays be used but that direct connections be made to the points on the v.r. board indicated by Fig. 14.

The general connection procedure is as follows.

(1) Receiver audio module. Take h.t. from the unregulated supply. Take input from the slider of a 50K potentiometer wired across the spare terminals of the uA719c i.c. (Fig. 14). The potentiometer can be mounted on a temporary bracket near the front of the base board.

(2) Receiver i.f. strip. Take h.t. from the unswitched regulated line on the v.r. board. Do not wire in the 320 μ F. and 1,000 μ F. a.g.c. timing capacitors at this time. Make the necessary connections between the a.m. (not limited) output pin, the 50K audio level control and the spare uA719c pins (Fig. 14 again). Do not wire in the a.m.-limited circuit.

(3) Connect the a.g.c. outlet on the i.f. board to the a.g.c. inlet on the v.r. board. Wire the "S" meter to the v.r. board. Set the 1.5K "S" meter zero and the 22K "S" meter f.s.d. trim pots on the v.r. board to half rotation. Set the 22K a.g.c. threshold trim pot on the i.f. board to maximum resistance to render the a.g.c. action inoperative (see Jan. '69 "A.R.").

(4) Temporarily connect a 100 ohm resistor across the i.f. board input terminals to act as a "load".

(5) From a signal generator apply 100 microvolts or so of modulated 9 Mc. to the input of the strip. Adjust the cores of T1 and T2 for maximum audio output, backing off the generator as resonance is reached. When on resonance, connect a 0-15 voltmeter between the a.g.c. line and earth. Adjust the 1.5K trim pot on the v.r. board to zero the "S" meter. Set the signal generator to 20 microvolts output and

then adjust the 22K a.g.c. trim pot on the i.f. board until the voltage indicated on the 0-15 voltmeter just starts to drop. At this point the "S" meter should just start to rise.

The back end of the receiver is now nearly on frequency. Exact frequency will be established in the next step.

(6) Remove the 100 ohm resistor from the input to the i.f. board and wire in first, the filter board and then the filter preamplifier board. Use thin co-axial cable for signal connections, earthing each end of the shield to the earth pins provided on the various boards. It may be necessary to take the earth mat on the i.f. strip directly to the ground plate by means of lugs soldered to the earth mat at each corner and use the mounting bolts to complete the earth return. The h.t. feed for the filter board comes from the main regulated supply. The h.t. feed for the preamplifier comes from the a.g.c. line. Apply a 100 microvolt modulated signal to the preamp. input. Swing the

generator slowly around 9 Mc. until a signal is heard going through the pass band of the filter. Centre the signal in the pass band and adjust the cores of T3 and L23 (Fig. 10) to resonance. Repeat the cores of T1 and T2 on the i.f. board to resonance. Note that these adjustments, and those that follow, can be done using the "S" meter as a tuning indicator.

The back end of the receiver is now operative in the "a.m.-not limited" mode.

(7) The VFO.

To adjust the frequency of the v.f.o. to the correct range, the following procedure is recommended.

Set the main tuning capacitor to full capacity and the 3/30 pF. trimmer to half capacity. Apply power to the v.f.o. from the regulated line. Listen for the v.f.o. note between 8 and 10 Mc. on a general coverage receiver. Note this frequency. Open the tuning condenser for minimum capacity and again search for and note the frequency of the v.f.o. signal.

As the coil supplied in the kit has excess turns on it, the v.f.o. range in the unmodified condition will probably be less than 0.5 Mc. and will have a lower range frequency below 10 Mc.

Temporarily short the top turn of the v.f.o. air-wound coil and repeat the "range" measurement. The lower v.f.o. frequency will now have risen from, say, 8.5 Mc., or thereabouts, to perhaps 9.0 Mc. or thereabouts. Again short a turn and repeat the "range" measurements. Repeat this procedure until the lower v.f.o. frequency is close to 10 Mc. and can be brought exactly on to 10 Mc. by adjustment of the 3/30 pF. trimmer. Remove the shorted turns from the coil and check again that the lower v.f.o. frequency can be set to 10 Mc.

(8) The 46 Mc. oscillator is now checked. Set the slugs of L15 and L13 (Fig. 6) to half way. Set the slug of L14 almost out. Screw L14 through its complete range and note where the drain current (as measured with a volt meter across the 1.0K decoupler, or with a 0-20 mA. meter in series with it) drops by about 0.5 mA. (indicating oscillation) and then rises again (in Mc.).

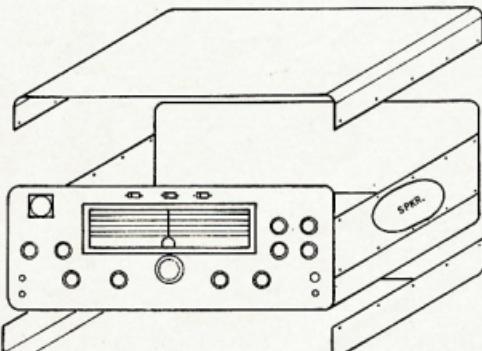


FIG. 21. EXPLODED VIEW OF CABINET.

dicating non oscillation). Set the L14 slug half way between the "oscillating" points. Check that oscillation starts reliably by switching the h.t. on and off several times. It may be necessary to repeat this procedure several times, making small adjustments to the core of L15 each time, to ensure reliable starting and oscillation.

(9) The heterodyne oscillators. For each band, one at a time, set the slug of L19 to mid way and the slug of L20 full out. Connect each oscillator to the regulated voltage line through a 0-10 mA. meter. Swing the slug of L20 through its full range, noting the points at which the drain current falls by about 0.5 mA. (indicating oscillation) and then rises again (indicating cessation of oscillation). Set the slug between these two points and check for reliable starting by switching h.t. on and off a few times.

(10) Receiver front ends. Check each front end strip separately, one band at a time.

Connect up the v.f.o./generator, the injection mixer and the appropriate heterodyne oscillator as shown in Figs. 14 and 15. The output of the injection mixer is coupled to the oscillator input of the front end board in use. Check that the 1,000 pF. capacitor across the output of the front end board is in place. (Refer to Dec. 1968 "A.R.") Connect the front end board output to the filter preamplifier, again using co-ax. H.t. feed for the front end board is taken from the a.g.c. line.

From the signal generator (set at mid band frequency) apply a 100 microvolt signal to the antenna input link (L1, Fig. 5).

Swing the v.f.o. tuning condenser until the input signal is identified. Peak the cores of L2 to L8 on the front end board, L16, L17 and L22 on the injection mixer board, and L10 and L12 in the v.f.o. for maximum output as indicated on the "S" meter, backing off the signal generator output as lining up proceeds.

The cores of the two 46 Mc. traps, L11 (v.f.o.) and L18 (inj. mix.) are set at the half way mark.

The complete receiver is now operational in the a.m. mode.

(11) The carrier oscillator and product detector. The carrier oscillator, or b.f.o., can be checked by applying voltage from the regulated line and listening around 9 Mc. on a general coverage receiver for output. Both "normal" and "reverse" carriers should be checked.

Feed output from the b.f.o. and the i.f. strip to the product detector. Apply a few microvolts of unmodulated signal frequency to the front end board. It should now be possible to hear an audio output. Replace the signal generator with an antenna, tune in a sideband station, and adjust the 3/30 pF. trimmer across the "normal" sideband carrier crystal to give acceptable speech quality.

This completes the primary commissioning procedure.

The various modules may now be placed in their final positions in whatever case or cabinet is to be used on the knowledge that they are all working correctly. Wire in the various external function switches and controls.

The final line-up consists simply of tweaking the various slugs to give maximum output. The cores of L3, L5 and L7 on the front end boards are adjusted to give maximum output at about 25% of the way above the lower band edge, while L2, L4 and L8 are adjusted at say 25% below the upper frequency end of the band in use.

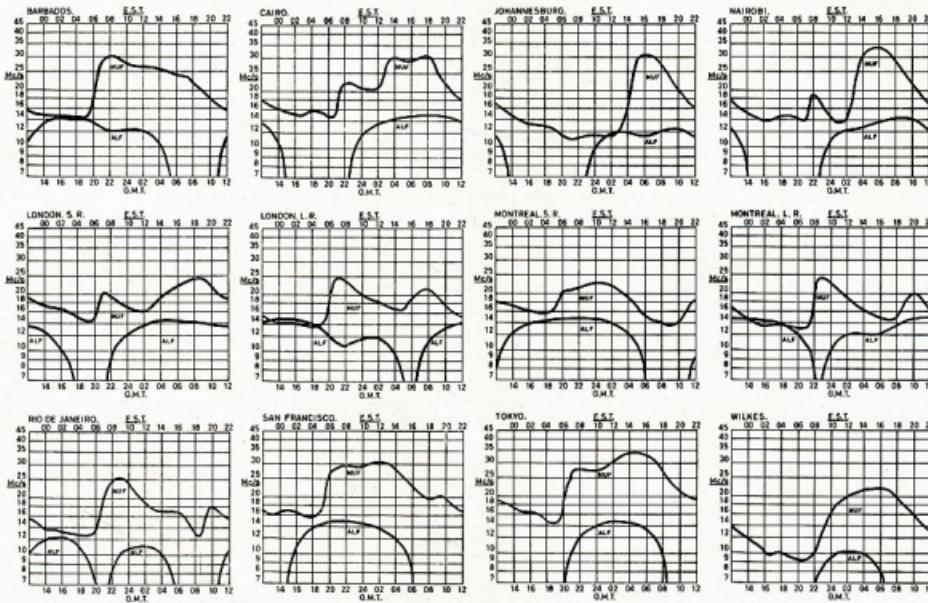
AVAILABILITY

(a) Fully drilled, cadmium plated and passivated cabinets with the exterior sprayed black are \$28.50 each, including packing. Supplies will be available from about the third week in May. Transport will be extra, so please include enough to cover 20 lbs. weight.

(b) Dials. The recommended Eddy-stone No. 898 dials are obtainable direct from Wm. Willis, of 430 Elizabeth St., Melbourne, 3000, at \$22.22 each. They can be obtained through the project at the same price if required.

(c) Accessories kit. This contains all the necessary plugs, sockets, knobs, switches, etc., except the bandswitch. The standard kit—including "S" meter and two 12 volt DPCO gold plated relays costs \$32.50 exclusive of postage. Relays and "S" meter are obtainable separately if required.

PREDICTION CHARTS FOR MAY 1969



(Prediction Charts by courtesy of
Ionospheric Prediction Service)

THE DJ4VM MULTIBAND QUAD*

Aerial System with Two Driven Elements and Centre Fed Single Quad Loop per Element

by PROF. DR. PHIL. WERNER BOLDT.† DJ4VM

(Abstract Translation by H. F. RUCKERT,‡ VK2AOU, ex-DL1EZ)

THE advantages of a monoband cubical quad aerial, to give good DX results in spite of low installation height ($<1\lambda$) and its high front to back (F/B) ratio, are well known. Not solved is the problem of achieving these features if a conventional multiband quad with two or three wire loops per element is employed. At 28 Mc. only 25% of the 14 Mc. element area is being used. Field interaction occurs and the phase symmetry upper and lower quad half is disturbed. Recent publications¹ show that certain solutions to this problem are being tried.

The author developed a new quad, working at first at 145 Mc., and since autumn 1967 on the DX bands (German patent applied).

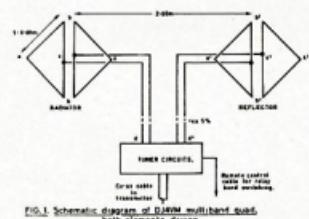


FIG. 1. Schematic diagram of DABIM multiband quad-bath elements shown.

DESIGN FEATURES

Each quad element consists of two triangles and the hypotenuses are part of the feed line to drive the upper and lower element half exactly symmetrically (Fig. 1). The four sides of the quad (short sides of triangle) are 5 m. (16 ft. 3 $\frac{1}{2}$ in.) to 6.4 m. (21 ft.) long for 14, 21 and 28 Mc. operation. The spacing between the radiator and the reflector may be 2.6 m. (8 ft. 6 in.). The reflector quad, including its tuned feeder, should have 5% more wire length or the tuning coil may be increased instead.

The feeder lines are made long enough so that the aerial tuners (one for each band, and such a set of three for each element, e.g. six tuners for a triband two element quad) can be easily reached from below the quad for tuning of the aerial at the final and high position. The feeder should not be a multiple of a quarter wave on any band, to avoid tuner adjustment difficulties. A single co-axial cable goes from the transmitter to the tuning box containing the switching relays and the tuned circuits of the aerial tuners.

Three diamond-shaped diagrams, each with a vertical line extending downwards from the bottom vertex. The first diamond has a label '25m' inside. The second diamond has a label '15m' inside. The third diamond has a label '15m' inside.

FIG. 2. Current distribution of an unsymmetrical fed 20m quad element operated at 25m, 15m, & 10m. A nearly round radiation should occur at 10m.

Aerial relays may be used to switch the co-axial feeder to the desired tuner parallel tuned circuit, and to connect the parallel wire feeders of the two quad elements to the appropriate tuner pair. The relays may be remotely operated from the shack.

ADVANTAGES

This quad has less wind resistance than a conventional 2×3 wire loop quad. The wire length is not critical, and the four outer quad element sides may have 2.4 times the length of the shortest wavelength transmitted. Loops of 4×5 m. (mini quad) or over 4×6.5 m. (extended quad) bring reduced efficiency and additional radiation loops respectively. Separate tuning of each element at the three main operating frequencies assures low SWR and compromise free conditions.

An extremely high front to back ratio is maintained in spite of the same spacing for all three frequencies (F/B ratio is only 15 db. in the case of some other multiband quads). There is only a small frequency difference (30 Kc. at 21.3 Mc.) between tuning for the best forward gain and maximum F/B ratio. The usually necessary difficult-to-perform tuning near the top of the mast is avoided. Retuning of the elements at full operating height, after the initial tuning has been carried out near the ground, is no problem.

The accurate symmetrical tuning and feeding of the element halves guarantees clean phase conditions, causing better directivity (narrow beam of radiation), therefore more gain and extremely small backward radiation, resulting in less QRM, low vertical angle radiation (important for DX). (See Figs. 2 and 3). These advantages may be worth the effort to construct the more complex feeder-tuning system, if the operator wants no compromise but perfection.

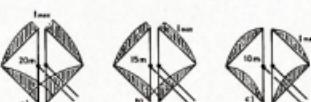


FIG.3. Semirec. current in upper and lower quad dipole system.

CONSTRUCTION DETAILS

The boom carries at each end a cross made of fibre glass or weather-treated bamboo rods. The vertical member of the cross holds the tuned feeder part of the quad element (hypotenuses of triangle) in form of a 600 ohm (or so) feed line. The two dipole wires are strung between the cross ends to form the quad loop. (Fig. 5.)

The aerial tuners have approximately the following dimensions (capacitors being 50 pF. maximum):

COIL DATA

20 mx band: 10 turns, 4 cm. (1.57 inch)
diameter.
15 mx band: 8 turns, 3.5 cm. (1.38 inch)
diameter.
10 mx band: 8 turns, 3 cm. (1.18 inch)
diameter.

The co-axial (50 ohm) feeder line may be link coupled (via 1 to 2 turns) or connected directly 1 to 2 turns away from the earthed centre of the tuner.

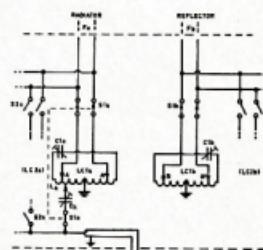


FIG. 5. Tuning and matching circuit for two-element multiband feedline of the required six bands are shown with various resistances.

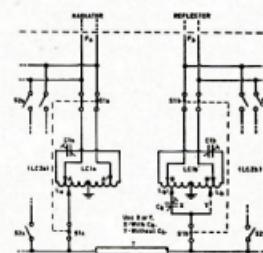


Fig. 4. Mean scores on the three dimensions of the PSS.

* Abstract Translation from "DL-QTC", No. 9, 1968.

† Am. Zuckerberg, 4773 Koerbecke/Moehnesee,
West Germany.

coil. It is recommended to add the trimmer C_k to be able to tune out the coupling reactance in order to obtain a low SWR. It is advisable to check the tuning of C_{1a} and C_{1b} with a calibrated GDO, with the quad connected, but the co-axial line disconnected (at first).

If the co-axial cable connecting points have been correctly chosen (matched condition), only a slight retuning of C_{1a} and C_{1b} is needed after the cable has been attached.

The reflector tuning is carried out by adjusting C_{1b} (C_{1a} may be rechecked finally), and a testing dipole

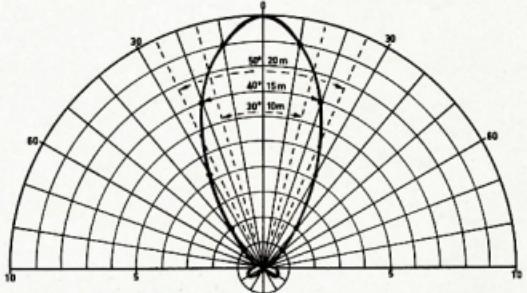


Fig. 7. Radiation pattern for DJ4VM quad for 20m, 15m (solid line) & 10m with driven reflector.

is used a few wavelengths behind the reflector and placed as high as the quad. The line between the test dipole (receiving diode) and the indicating instrument (near quad tuning box) must be r.f.-free and shielded to avoid misleading results.

Fig. 5 and Fig. 6 show a version with parasitic and one with driven reflector respectively.

The second case is shown in Fig. 6. In order to feed the radiator and reflector with r.f. of opposing phase, the co-axial line is split near the tuning units, and the leads from the switches (relays) S_{1a} go to the left half of the coil L_a and S_{1b} to the right hand side of L_b (case "Y"). The connecting points at the coils are slightly moved outwards (120 ohm) to achieve matching.

If a further improvement in the SWR is found to be necessary, the trimmer C_k (case "X") may be added (connection "Y" removed) and C_k is attached to the left side of L_b , e.g. left of the earthed centre tap. C_k and C_{1b} are alternatively adjusted for SWR minimum.

The coil tap positions for the feeder leads from S_{1a} and S_{1b} (via C_k) are:

20 m band: 1.5 to 3 turns from the earthed centre.

15 m band: 1 to 2 turns from the earthed centre.

10 m band: 0.5 to 1.5 turns from the earthed centre.

The backward radiation minimum is very sharp. A SWR of less than 1:1.5 should always be obtainable at the tuning frequencies.

RESULTS

Absolute gain values are not quoted because a suitable test dipole (as high as the quad, at the right distance) was not available. The radiation pattern (Fig. 7) was obtained with the help of DJ5RH operating a high quality measuring receiver (Siemens, Type B63 600-A80) at a six miles (10 km.) distant location. The often quoted S meter readings of uncalibrated receivers are not accurate enough and often only wishful thinking.

The horizontal width of the radiated beam at the half power level amounts here to only 50° at 20 m (75° with

received signal happens to come in (propagation, position and type of the other operator's aerial).

Measurements over the 21 to 21.45 Mc. band (Fig. 8) show some interesting features, which are also true for many other beams. One finds a maximum forward gain at 21.34 Mc. and a substantial drop at 21 Mc., whilst the SWR is within 1:1.2 and 1:1.4 over the entire band with the minimum near 21.2 Mc. (not 21.34 Mc.). The F/B ratio maximum is found at 21.3 Mc. (30 Kc. below gain maximum). It is clearly demonstrated that a high gain aerial is selective and has to be tuned to the mainly preferred Amateur band section to utilise its ability to advantage.

It may be mentioned that the described quad principle can be adapted to other quad forms like triangle hypotenuses held horizontal, circular elements, Swiss (HB9CV) quad, etc. At v.h.f. it was noticed that a 50% increase of the loop circumference caused a marked gain increase. It may be possible to replace the three separate tuning units per element by one multiband tuning circuit (a la VK2AOU).

The author expresses his sincere thanks to Om Karl-Heinz Krah, DJ5RH, for the help during the aerial construction work and the assistance given during the many measuring runs.

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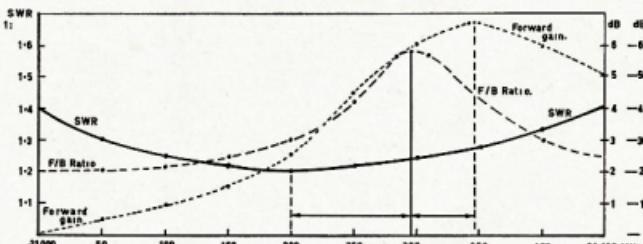


Fig. 8. F/B Ratio and forward gain variation of multiband quad (driven reflector) over 21 MHz band.

We Radio Amateurs would not consider ourselves genuine unless we applied a little electronic touch to the solving of quite commonplace problems. We must be a sore trial to our more practical minded XYLs. This difference in our respective mental attitudes was startlingly illustrated quite recently on this particular radio active farm.

We have here a problem pup, much beloved until quite recently. His fall from grace was due to his base betrayal by an indignant hen. He was unlucky enough to get "copped" while still urging her to greater speed in the production of his breakfast egg. He repented on the chain with a sore tail, but this sad experience only endowed him with the knowledge that caution and silence were essential in all exploits hen-wise.

My own XYL, after much experimenting, has developed quite a standard technique. At the first sound of a triumphant hen she "hushes" me in elegant sign-language while she takes a couple of audio bearings to pin point the exact position of the chook. Then she rushes out casting one suspicious eye on our egg-eating pup and the other on a crow that lurks in the big fig-tree waiting for his breakfast too.

If no egg is forthcoming, then a very strained situation exists. Both the crow and the pup know where the egg is but she doesn't. The pup has the wrong technique under these circumstances. Anticipating an examination of his molars, he slinks off to his kennel, followed later by a wrathful XYL who ties him up. He gets in a couple of cossily licks on her face while her hands are so engaged, but it doesn't do him much good (or her either).

It was evident then that the situation badly needed that delicate electronic touch previously mentioned, that is so exclusive to such as us. Some trusting soul had providentially just given me an electric fence to fix. It already had quite a good "kick" but my junk-box produced the goods to make it even better. I tried it out on an old cow that always licked out the chooks feed tin and it worked fine. A china egg with a groove in it to take the wire, some fresh egg yolk for its aroma and for disguise, some insulating material and some well wetted ground were all that were needed extra.

Along comes the pup but he stalks past it as he remembered past tribulation over public displays with an egg as exhibit A. He sat down and scratched off a few imaginary fleas as he took stock of the situation, but, as no excitement had erupted from the house, he confidently returned. Cautiously he approached it, keeping a wary eye on the house. A quick removal to a more remote spot was standard practice, but the beautiful aroma of egg yolk that assailed his nostrils made him decide to give it just one delectable lick first. He was astonished! He didn't know if he let go of it or "IT" let go of him,

* Skyrings Creek, Pomona, Qld., 4568.

but he was first into his kennel and, although tightly jammed into the corner, it didn't take him long to be sure that "IT" was not now with him too. He relaxed when he realised that he was temporarily safe. Then he gained enough confidence to even poke a little black nose and a suspicious eye out from his box. Re-assured, he ventured to give a few ferocious barks in the general direction of his enemy.

All was quiet. He ventured out, then hurried back (just in case . . .). He decided then that it had all been just one big mistake, so, out he came with his tail held high and jauntily strolled around looking for something to register a victory over, just to restore his shattered morale a bit. A fitting subject was right to hand in the outward garb of the family cat that he was currently feuding with. He cautiously sneaked up on her then "pounced". Puss, highly bred, and having nightmares, thus suddenly assaulted, fled up the electric light pole, but, on seeing the familiar pup as the cause of her fright, she descended inelegantly and stalked home, outraged dignity depicted in fluffed-out fur and quivering tail. She paused long enough to swipe him "fore and aft" when he enthusiastically tried to "tree" her for the second time. Pup ignored the scratches on his rear end

to rub his lacerated nose through the long grass, even though it made him sneeze.

This brought him back to the vicinity of the egg. He was dismayed to see that a broody hen had beaten him to it, and, with happy clucky noises was just settling on it. From past experience he knew that clucky hens were hard to shift. They fluffed up their feathers with queer noises then pecked him on the nose. This one fortunately acted quite differently. She rose suddenly with much melody, exposing his precious egg, so he nicked in quickly and got it right from under her nose.

He wished he hadn't. "IT" had got him again for sure, but fortunately let go of him while he was still in the air on the return journey. With his superior speed, he was again able to reach the safety of his own kennel. Temporarily safe, then he decided to stay put and just brood on the hard lives that pups lead on these farms where even the cows with calves kick playful puppies on the nose then roll them in the dirt and bellow in their ears. Now "IT" had got his breakfast egg and bitten him twice. But he cheered up when he saw a silly hen approaching intent on swiping one of his discarded crusts. He hunched up ready to pounce. Now this was going to be real fun.

AMATEUR T.V.

(Continued from Page 7)

directly into the valve that is being modulated. A few basic circuits may give you the general idea.

Finally, before I close this article for this month, I would like to summarise what I have said.

Television, being a logical development of radio, should interest you Amateurs immensely, it should be a challenge for Amateur Radio. Seeing that some of our fellow Amateurs are not only capable of transmitting television signals but are capable of transmitting colour, the moment the P.M.G. gives Amateurs the go-ahead, don't you think that Amateurs could do a little better than they have up to date? It is up to you, prove the cynics who say "ATV is too hard to handle" wrong.

Even if you cannot become actively involved in video you can at least give a great deal of support to those who are by at least taking an interest. You can show this by at least receiving some of these chaps and giving them a signal report. If you would like any specific information about any facet of ATV at all please feel free to contact the ATV group in Sydney or contact me by letter at my address, which is:

Grahame L. Wilson,
29 Goodlands Avenue,
Thornleigh, N.S.W., 2120.

If you wish you also may phone me at the above address, the phone number being 84-5475 after 6 p.m. I hope you have enjoyed reading this article. I certainly enjoyed writing it. If you have liked it or you would like any particular item discussed, write to me personally or the Editor of "Amateur Radio."

In the next part I will be discussing cameras and the "systems" they employ with the theory behind it.

1969 VK4 SOUTH SEA ISLAND CONVENTION

This year the State Convention will be held at **Bribie Island** on the weekend of **7th and 8th June**. Mark your calendar now.

Councils now had a preliminary discussion and March 1969 will give final details. Also VK4WI will have up to date news.

The Convention will have as its main interest a Saturday evening function along the lines of an Hawaiian night—casual dress, help yourself to dinner, music, laughing, talking—good fun consisting of a buffer of fun followed by full evening's entertainment which should cater for all. We hope to make this function a most memorable occasion and its success will be ensured by your attendance. It will not be a problem for many to remain on the island that evening. Settle in on Saturday morning, visit places of interest, set up shop, etc.

Saturday afternoon will be set aside for technical sessions when it is proposed to have exhibits displayed, printed circuits, interference problems, modern circuitry, S.T.Y. equipment etc., etc., with displays and opportunities for queries. Technical literature will be available. Of course, those who wish may surf, play bowls, swim, etc.

Sunday morning, VK4WI will be operating and h.f. and v.h.f. contests, together with displays, will be the order. Early afternoon is the time for a general meeting followed by presentation of trophies and the auction.

Accommodation will be to suit you and your pocket—camping, stationary caravans, motels, flats, luxury hotels. Men's single accommodation will also be provided. For bookings for any of these, contact Ross Cuttle, Cummings St, East Brisbane, 4100, 33-1070. Children will be catered for with competitions, organised games and entertainment.

Our planning will be simplified if we know you may come. Get a message through to us. Of course we must know who will be along on Saturday night for the dinner and fun.



VK-ZL-OCEANIA DX CONTEST 1968 RESULTS

AUSTRALIA AND NEW ZEALAND

Call Sign		C.W. Section						Total
		80	40	20	15	10		
VK2APK		—	2360	6555	5715	3230	17660	
VK3GW		—	2360	5555	3220	2190	13260	
VK2VN		145	2630	2390	1005	2110	8070	
VK2QK		345	1265	240	775	780	5535	
VK2BRK		—	2325	—	—	—	2325	
VK2AND		—	—	1690	—	—	1690	
VK3QK		—	2690	6455	3100	1675	13330	
VK3VD		—	—	—	8185	—	8185	
VK3ARX		—	—	5340	—	—	5340	
VK3APN		1065	3305	—	—	—	4833	
VK3QJ		—	—	4620	—	—	4620	
VK3ABA		—	—	—	3460	—	3460	
VK3OP		565	2635	—	1370	1095	2465	
VK3ABR		—	—	—	—	—	—	
VK3RJ		—	—	—	—	1790	1790	
VK3QV		—	—	—	—	1390	1390	
VK4RJ		—	—	3270	5885	2115	10070	
VK4VX		—	—	—	7745	—	7745	
VK4XJ		—	—	—	—	5220	5220	
VK4WO		—	—	235	1845	—	2160	
VK4QW		—	—	530	—	—	530	
VK4RM		—	—	2783	6035	745	8513	
VK5PQ		—	—	679	1000	—	1679	
VK5BS		—	—	565	—	—	765	
VK5KSO	check	—	—	—	5515	2220	7735	
VK6UT		—	—	—	5050	—	5050	
VK6TK		—	940	1555	4445	1999	15554	
VK6HSA		—	—	—	—	1835	1835	
VK6DR		—	—	—	—	1360	1495	2845
VK6XJ		—	—	850	290	1050	1190	

Diagrams Section

Call Sign	86	86	39	39
VK1GKD	370	900	5575	6375
VK2KMK	2240	8825	6340	5635
VK3APK	1590	8485	4630	4855
VK3AOU	2325	2325	2340	1825
VK3HXR	4185			
VK3VZ	3075	470		
VK2AKV				
VK2QAND		1135	545	275
VK3AJXK		1415	735	2150
VK3QJK	400	5675	2500	14275
VK3LW		2305	3180	2745
VK3LWLW		6565	965	1025
VK3JARX		5500		
VK3ISM		4450		
VK3VZ		3975		
VK3JABA		3970		
VK3QJV			3005	3065
VK4LT	7290	1675	3625	12590
VK4VX	9389			
VK4VX		7685	7685	
VK4SF	5870			
VK4LZ	4710	620		
VK4RF	4275			
VK4PZ	3810			
VK4PJ		2850		
VK4QW	1070			1070
VK3FS	6490	4865	4525	15860
VK3WV	1730	4320	4280	15860
VK3WPM		2150	2955	6610
VK6UT	9445	3735		13180
VK7TGK	480	9480	4330	3520
VK8CM		2330	2465	919
VK8KRS		630	120	55
VK8KRS	check			80

Listeners' Section

VK—L2342	—	—	—	4575	points
BERS195	—	—	—	5840	"
L3377	—	—	—	5410	"
L3395	—	—	—	2615	"
L3308	check				
L4144	—	—	—	8275	"
L4104	—	—	—	6275	"
L5088	—	—	—	10865	"
VK5—L2245	—	—	—	4695	"
L6021	—	—	—	20325	"
TA—L2406	—	—	—	14553	"

C.w. Section (continued)

Europe	
4402	OK2WDC
3240	OK1AII
3068	OK2DB
1120	OM3QX
844	OK1BZ
390	OM1CJU
(K)	
2225	OM1EP check
	OK2BCK check
4818	OK2LLO
2080	OK1BZ
1005	OK4XG
680	OK1U5X
280	OK1HOW
240	OK1WH1
50	OK1KX
4	OK1RAD
60	OK1HTV
32	OK1RH check
	OK6HNN check
680	OK2L1AG
440	OK1BAA
240	OK1ASC
2	OK1AK
2382	LA1E (K)
1218	OK1BVB
20	OK1PAC
60	PA0UV check
300	SM1TANB
50	SM3CX5
24	SM3BYG
2	SM3CJ
4867	SM1TAPI
2160	SM1SCLU
468	SM3ARE
14	SM3CUN
1540	SM3DVN
1062	SM3EXE
560	SM3FJL
532	SP2AII
200	SM3FJL
238	SP2AOB
192	YU1BCD
	SM5APS check

ZI BAND LEADERS

ZL BALD LEADERS		Phone
ZL1AJU	22905	ZL1AMN
ZL4BO	17886	ZL4BO
ZL1AMO	16520	ZL1HW
ZL1AJU	5810	ZL1JS
ZL1DS	5483	ZL1DS
ZL3IS	3020	ZL1AMN
ZL1AMO	8610	ZL1HW
ZL4BO	6279	ZL4BO
ZL4BO	6146	ZL4BO
ZL2FA	9823	ZL4BO
ZL2ANX	9485	ZL1AMN
ZL3GQ	8960	ZL2AFZ
ZL3GQ	2740	ZL1AGO
ZL4BO	2570	ZL4BO
ZL4BO	2570	ZL4BO

OVERSEAS

OVERSEAS		C.W. Section
	North America	
1EVT	10530	WASTPO
1DTY	4172	KHHN
1AX	2352	W3NN
1NIN	3544	W6RRGG
1WY	3523	K5HHPZ
1SWX	40	WHID
2LWI	6039	WGBY
2LWZ	4500	W5DDO
2MBX/2	24	W1H
2A2HAI	3	K7VPP
3NU	9928	WBVNE
3VKD	4890	WBHHN
3V4	4	WB7V
404MW	1380	WUDYA
4RDU	1062	VO1AV
4BYB	496	VE3EWY

168
6

4HOS	297	KP4BBN
5BUK	3725	
		Asia
JA1ADN	5516	JA3DEO
JA1JKG	4123	JA3YKM
JA1FGB	3757	JA4SZ
JA1SR	3000	JA4XW
JA1AYO	672	JA4IO

Phone Section

Phone Section			
North America			
644	W61SQ		825
1476	K7TRLS		1027
4805	WA1JRY		562
125	WA1JRY		4031
35	W5PAN		828
848	W93ECV/0		828
114	VE3GCO		288
96	KP4BBN		64
5			
8064	4A1LLS		2604
(K)	6565	HR1LJS	1640
1000	HR1LJS		1640
14280	GO1F4		131

Europe

DJ3YL	8640	OS2CE	108
DJ4LK	8640	OS2CE	2
DJ4LK	5365	OZCR check	
DJ4LK	1974	OM1ADM	1566
DJ4LK (K)	5580	OM2ABU	206
DJ4LK	5568	OM3BU	120
DJ4LK	5568	OM3BU	96
FIAT	420	OM1HA check	
G3SSO	6016	OM1ADP check	
G5ALW	8	SM7AZL	4698
GW3NNF	1224	SM5API	1404
GW3NNF	1224	SM5API	1404
H2ZMB	50	SM5BPF	100
H2ZMB	4611	SM7DMN	217
H2ZUD	208	SM5BUS	160
IIAT	1092	SM3VE	20
IIAT	1040	SM3VE check	
ON4XC	1094	PA0HDX	1498
ON5DJ	885	PA0ABM	95
ON4PL	240	PA0VB	60
OH7PI	6660	PA0CZA check	
OH7PI	2688	PA0CZA	536
OH2EH	847	LA7AJ	540
OH2BAD	616	LA9CE	481
OH7QC	88	LA1H (K)	260
OH4RH	LA7QI	44	
OH4RH check	LA7VK	4	
OS2SK	3548	LA7FH check	
OS2LLO	2268	SP2AJK	726
OS2KE	117		

Asia

JA1ADN	11970	JA4ERX	1794
JA1DNO	1489	JA4PM	564
JA1DNO	1489	JA4PM	564
JA1SIV	636	JASCB1	500
JA1SIV	506	JASIU	9
JA1AIA	346	JAS6YC	12054
JA1JNM	326	JASAD	11768
JA1JNM	264	JASAD	11768
JA1DHW	94	JAS6K	343
JA1DHM	84	JAS6K	40
JA1DHX	72	JAT7MA	7920
JH1JQU	4	JAT7MA	2628
JH1JQU	8298	JAT7CVW	10
JAZ1AA	6699	JAT7SKN	10
JAZ2DDN	3672	JAS8QOB	7488
JAZ2EAD	1568	JAS8EAT	8
JAZ2LXF	968	JAS8BAB	2415
JAZ2LXF	968	JAS8BAB	500
JAZ3HBE	18	JAA6ADY	528
JAZ3HBE	10	JAA6ADY	150
JASD1	9273	JAO6DFL	24
JASLGG	3858	KATCW	420
JASLGG	3858	SV1OE	260
JASGNQ	840	HL9TT	1348
JAZ4XW	1989		

U.S.S.R.

UA1DJ	912	UH8BO	4
UA1DJ	912	UA9DQH	1416
UA3K5O (K)	6067	UA9EH	1330
UW3EH	440	UA9MR	546
UV3AAE	182	UW9WR	224
UA3K5G (K)	176	UA9PF	70
UP2EP	378	UA9PF	18
UP2EP	2254	UV9PF	18
UW4AR	10	UA9PF	12
UW2KAW (K)	2210	UA9MT	12
UW4IB	304	UV9OR	8
UR5WE	4290	UA0YD	1222
UR5WE	465	UD4DG	994
UR5WE	240	UD4DG	964
UR5OD	60	UD4NL	161
UOSBZ	8	UA0SU	

Oceania

KH6GN	10620	DU1FH	21464
KH6GMP	3540	VR1L	20258
KH6GK1	2750	K0LL/KG6	16124

Africa

Z55OB	1314	CR6LF	48
Z55OA	1278		

Listeners' Section

Europe

DM-2A3H0/J	1085	II-12946	
DM-2A42/L	1274	LA-16611	414
DM-2A440/J	1274	LA-21263	12
DM-3676/L	32	OE-12680	—
EEA-1306	2622	ONL-363	—
EEA-1306	1206	HA5-146	2457
EEA-1306	1206	HA5-146	440
A-5062	2730	HA2-007	676
G-1516	672	HA5-140	330
GW-7796	2988	HA5-153	12
HE8EVI	169		

WPE-8JLL	450	WPE-9INP	112
WPE-9JLL	138		

Asia			
JA9-1320/JA1	9100	JA2-3094	868
JA1-4876	1538	JA2-1885	494
JA1-8065	1410	JA5-2188	234
JA1-5966	1297	JA0-1885	4100

U.S.S.R.			
UA1-13618	2484	UA3-170-200/UA9	824
UA1-13618	2484	UA3-165-35	24
UA3-127-202	274	UA3-165-35	24
UA3-127-202	274	UA3-165-35	24
UA1-170-62	200	UO2-037-10	300
UA1-170-62	200	UO2-037-10	300
UA3-14222 check	208	UP2-0384	858
UA4-0651	5412	UP2-0388	858
UA4-0651	5412	UP2-0388	858
UA4-13321	210	UP2-0385	896
UA6-101-60	204	UE5-0019	919

ROSS HULL MEMORIAL V.H.F. CONTEST

1968-1969 RESULTS

TROPHY WINNER

VK5ZKR—C. M. HUTCHESON

RESULTS TABLE

(Award Winners in bold type)

Call Sign	48-Hour Score	7-Day Score	Section
VK1IVP	178	213	B
VK2ZCF	599	1302	B
VK2ZHR	128	268	B
VK2ZAH	228	228	B
VK2ZRE	40	110	B
VK3AKC	568	2015	B
VK3ZMS	256	872	B
VK3ZYO	188	804	B
VK3AOT	329	683	B
VK3ZOP	—	592	B
VK3AXV	166	570	B
VK3ZRG/T	224	523	B
VK3ZSD	392	737	B
VK5ZMW	280	719	B
VK5TN	50	95	B
VK6MM	—	99	B
VK7ZAH	332	884	B
VK7BQ	55	120	B

Receiving Section

VK3—Maurie Batt

VK5—S. Ruediger

"Rather poor 6 mx DX, but 2 mx made up for it from 7/12/68 to 12/1/69. 2 mx was open every day. On 3rd January, we even tried to get a number from the VK6 2 mx beacon, hi."—VK5ZMW.

"For the effort involved, if nothing else, to go on 576, the contact here was a three-day expedition. The points for 576 should be doubled from those set for this Contest."—VK5ZSD.

"6 metre scoring table ridiculous (for VK3 conditions), should be—up to 50 miles ... 1 point; 51-100 miles ... 5 points; 101-200 miles ... 10 points."

"Rules should have been published earlier. For scoring, the 432 table could be a little higher—it seems unrelated to average path loss compared with 2 mx. Otherwise, very good."—VK3ACT.

And so another v.h.f./u.h.f. contest passes with low activity on these bands. It is hoped that the future may be brighter. This year saw contestants competing for the trophy and only a narrow margin separating the winner and runner-up.

Perhaps next year will see a greater participation.

Looking forward to seeing YOUR log next year!

73. Neil Penfold, VK6ZDK, F.C.M.

★

W.I.A. V.H.F.C.C.

New Members:

Cert. No.	Call	Confirmations
51	VK4ZBG	134
52	VK4ZCZ	114
53	VK5AQR	129
54	VK5AQR	263
55	VK5ZOP	105
56	VK5ASQ	106
57	VK5ASQ	225
58	VK5AOT	108
59	VK5ZB	102

Amendments:

44	VK5AMK	145
46	VK5ZNJ	230
47	VK5ZNJ	250

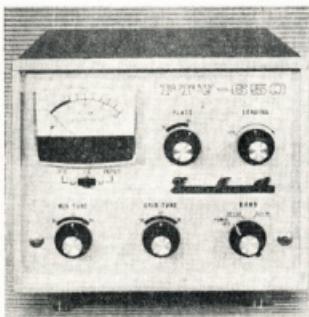
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CONTEST CALENDAR

5th/6th July	R.S.G.B. 12 Mc. Contest
5th/6th July	N.Z.A.R.T. Memorial Contest (3.5 Mc. only)
16th/17th August	Remembrance Day Contest
4th/5th October	VK/ZL/Oceania DX Contest
1989—Phone Section	
11th/12th October	VK/ZL/Oceania DX Contest
1989—C.W. Section	
11th/12th October	R.S.G.B. 28 Mc. Telephone Contest
25th/26th October	"CQ" W.W. DX Contest—Phone Section
25th/26th October	"CQ" W.W. DX Contest—C.W. Section
29th/30th November	"CQ" W.W. DX Contest—C.W. Section
6th Dec. 1969, to 11th Jan. 1970	Ross A. Hull Memorial Contest
1st/2nd Feb. 1970	John Moyle National Field Day

New Equipment

SIX METRE TRANSVERTER



The Yaesu Musen Model FTV-650 Six Metre Transverter takes a 28-30 Mc. signal and transverts to the six metre band in two ranges.

Transmitter: Input frequency range, 28-30 Mc.; input drive, up to 3v. r.m.s.; input, high impedance; input power to p.a. (S2001), 50w. d.c.; output frequency (two ranges), 50-52 Mc. and 52-54 Mc.; output impedance, 52-75 ohms.

Receiver: Frequency ranges, 50-52 Mc. and 52-54 Mc.; antenna input impedance, 50-75 ohms; sensitivity (when used with FRDX-400), better than 0.5 uV. for 10 db. S/N (s.s.b., c.w.), better than 1 uV. for 10 db. S/N (a.m., f.m.); image rejection, better than 50 db.; output frequency range, 28-30 Mc.; output impedance, 50-75 ohm unbalanced.

Power requirements (external): 6.3v. 3.5a. a.c. 150v. 30 mA. d.c., 300v. 50 mA. d.c., 600v. 150 mA. d.c., -100v. 20 mA. d.c.

Valves used: two 6CB6s, one 6AW8A, one 12BY7, one S2001 (p.a.).

Dimensions: 6 1/4" (plus feet) h., 8" w., 11 1/2" d.

Further information from Ball Electronic Services, 60 Shannon St., Box Hill North, Vic., 3129.

PROVISIONAL SUNSPOT NUMBERS

DECEMBER 1968

Dependent on observation at Zurich Observatory and its stations in Arosa and Mendris.

Day	R	Day	R
1	113	16	64
2	115	17	77
3	122	18	98
4	128	19	101
5	134	20	106
6	133	21	101
7	126	22	119
8	132	23	122
9	145	24	120
10	119	25	132
11	83	26	140
12	58	27	154
13	84	28	152
14	55	29	139
15	88	30	117
	31		119

Mean equals 112.9.

Smoothed mean for June 1968: 107.0.

—Swiss Federal Observatory, Zurich.

WIDE RANGE TESTER



The 'Rapar' Model SK-100 Tester is a full size meter suited for professional and Amateur use. Features include overload protection, mirror scale, and is fitted with nickel plated test prods.

Sensitivity: 100K o.p.v. on d.c.; 10K o.p.v. on a.c.

The 23 ranges include—DC Volts: 0-0.6, 3, 12, 60, 300, and 1200. AC Volts: 0-6, 30, 120, 300, 1200. DC Current: 0-6 uA, 300 uA, 6 mA, 600 mA, and 12 amp. AC Current: 0-12 amp. Ohms: 0-20.0 megohms in four ranges. Centre scale reading: 150 ohms, 1.5K, 15K, 150K. DB: -20 to +17. (0 db. = 1 mW. in 600 ohm line).

Further details from Radio Parts Pty. Ltd., 562 Spencer St., Melbourne, Vic., 3000, and City and East Malvern branches.

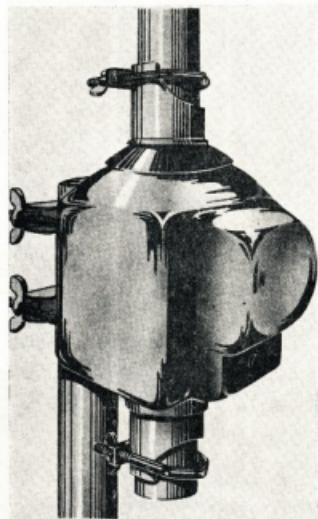
AUTOMATIC AERIAL ROTATOR

Designed to suit many applications requiring aerial rotation, the Stolle automatic rotator provides positive control from a fully synchronised unit by means of a balanced bridge circuit using transistor amplified control.

The connecting cable between the control unit and the drive unit operates from low voltage (42v.); when the rotation cycle is complete, the power shuts off automatically, and draws no current until it is activated again by turning the control knob.

The drive unit consists of a water-tight cast metal housing with hollow shaft to take mast up to 1 1/2" diam. Other features include: High carrying capacity (max. load 112 lb.), motor shaft bearings permanently lubricated, rotation angle 360 deg. (limited by stop at end of rotation), speed 1 rev. per minute, magnetic disc brake with self-restraining worm gear holds aerial in position.

The control unit is housed in an attractive moulded case, with 240 volt a.c. power supply (60w.). Push-button control sets the direction of rotation, left to right, while the dial indicator shows the direction of the aerial at all times.



Trade price: \$45 plus sales tax. Further details from R. H. Cunningham Pty. Ltd., 608 Collins St., Melbourne, Vic., 3000.

NEW W.A. BRANCH

R. H. Cunningham Pty. Ltd. have opened a branch office in Western Australia at 34 Wolya Way, Balga, Perth, 6061. Manager is Bob McGrath, and the phone 49-4919.

RADIO PARTS CHIEF OVERSEAS

Mr. Allen Swann, governing director of Melbourne wholesale components house, Radio Parts Pty. Ltd., is currently in South America on a three months' holiday-business tour. Accompanied by his wife and daughter, Mr. Swann will visit principal capital cities and will investigate electronic manufacture and development. He is expected to return to Australia about May 24.

TECHNICAL AWARDS

The awards for technical articles published during the year ended February 1969 have been made to the following Amateurs:

H. F. Ruckert, VK2AOU.

A. S. Lundy, VK2ASI.

R. B. Zielinski-Petersen, VK5ZIE.

The Publications Committee extends its congratulations to these gentlemen, and thanks them for their submissions.

Overseas Magazine Review

"QST"

December 1968.

What is a R.T.T.Y.? K1PLP. Description of the process with the steps that need to be taken to get on the air on r.t.t.y. including modulating and demodulating techniques.

The **Chirp Magnifier**, WB2KVK/1. This is a device for increasing the amount of frequency drift or keying chirp from a v.f.o. An ordinary transistor radio can be used as an indicator if required. The answer for the "transceiver man".

Gimmicks and Gadgets, WSHDO. The author describes a converter to put v.h.f. fm. 138-145 Mc. into the standard v.h.f. fm. h.c. 88-108 Mc. and make use of an ordinary fm. receiver. Hardly applicable in Australia without an fm. service.

A Solid State Product Detector for the HRO, W6PHF. A silicon diode ring de-modulator (detector) and i.f. stage module. It improves on the performance of an old fashioned receiver. This technique could probably be applied to a number of older receivers in use in Australia. AR74 can use this "as is", whilst AR88LF, BC458, AR8s, etc., will require modification. It is fine in the detector but to suit the receiver being modified.

An Impedance Matching Method, K7KOK. Combining the balun and the L network. Design details are given for tuning networks for a number of Amateur bands.

Is a Beam Required? W1CPC. Lewis McCoy discusses the advantages and disadvantages to be obtained from the use of these devices.

Synchronous Weak Signal Detection with Real Time Averaging, WB2DEX and R. T. Kado. WB2DEX is W. R. (Ross) Adey, M.D., who was well known for his Amateur activities and contributions to the U.S. Navy. He describes a system of digging very weak signals out of the noise. The technique was developed for use in medical research and has now been applied to 144 Mc. moonbounce work.

A Solid State All Band Filter, WB6NMK. An after market twin 88 Mc. telephone torque loading coil for the AR7 and R.C.A. IC-CA2020 to be used with receivers or transceivers to give a bandwidth of 80 cycles at -6 db. The bandwidth is at the lowest practical limit as Morse at 25 w.p.m. needs a minimum bandwidth of about 75 cycles.

Further Improvements in the 32S-3 94AX. A simple method of reducing spurious heterodyne products that have been observed in the output of the 32S-3 transmitter. Interested parties are also referred to a previous article in "QST" Nov. 1964. It may be appropriate to point out that the author is with the Public Library in Melbourne and no doubt others also have "QST" and other overseas magazines available in the reading room. A copying service is available at reasonable prices.

A Two-Stage Transistor Pre-Amplifier for 120 Mc. W6AVTR. Using two 2N3815 transistors, a low noise r.f. amplifier.

A 40 Ft. Self-Supporting TH-Over Mast for less than \$50, W1YUT. With a title like that who needs a resume?

Combining V.H.F. Bandpass Filters, W3CQH. Since normal interdigital filters tend to be too large for convenient use at 144 or 50 Mc., the author loads the ends of the lines with capacitors.

"RADIO COMMUNICATION"

December 1968.

A Design for a Solid State Linear Amplifier, GH1HF. Factors essential to the stability and linearity features of a 144 Mc. linear amplifier are discussed. The theoretical and design coupling networks are established and a simple theoretical approach to the design is suggested. The parameters of a complete amplifier are determined in a worked example. This amplifier is to be capable of 50 w.p.m. p.e.p. in British tradition. This should be output. It is a very neat design that appears to be reasonably easy to duplicate and could interest a large number of our v.h.f. men if the 2N3832 transistors are available at reasonable prices in Australia. This may also carry lessons for the h.f. men.

Technical Topics, G3VA. In this regular review type feature, Pat Hawker discusses "Linear Detection," and this is followed by "Narrow Band Hints from ZS6BT" who dis-

cusses the receiver requirement necessary for reception of weak c.w. DX in the presence of strong interfering signals. "What's happening inside" is discussed in an article on a device for checking the current flowing in the outer sheath of the co-ax feeder. It consists of a toroid wound with a number of turns feeding a diode and an indicating meter. "VHF Transistor on S.s.b." and "Capacitively Loaded Dipoles" are the other two subjects discussed.

G3LUB E, C and L Bridge. The author sets out "the aim of the design" after the introduction, but nowhere in the article does he set out a specification as it was achieved, nor does he give a clear indication of the degree of accuracy to be expected from the bridge. This latter probably depends upon the calibrating facilities available to the builder and the in-built precision of one or two critical components. This is probably the most detailed published construction article which has been published.

"SHORT WAVE MAGAZINE"

December 1968.

Direct Reading Reflectometer, G3UXP. This unit which is based on the Monimatch design from "QST" has a number of things to recommend it. Firstly, two 50 uA. meters are used with individual adjustment pots semi-air-panned. The unit is well designed and easy for easy insertion of the pick-up wires, the design will give f.s.d. of the meters with less than 10w. input on 1.8 Mc., and the unit is very neatly built into an Eddystone type die-cast case.

R.T.T.Y. Station Control Simplifier, G3LT. This is a continuation of the article which commenced in the November issue of this journal.

Reversing the Car Electrics, G3ESP. In these days of motor cars, it is, of course, necessary to make many alterations to the device itself before one can succeed. With a generator, the matter is much simpler. The author describes the way to go about it. I have heard that with most cars it is only necessary to (1) reverse the battery polarity, (2) momentarily close the cut-out contacts, (3) start vehicle and check that charging is now taking place in the reverse direction.

Notes on the TR-5088 Receiver, G3HJR. Having purchased an inexpensive receiver and become aware of its shortcomings, the author proceeds to modify it and overcome them.

Centre Fed Multi Band Aerials, G3GQR. Design considerations for various types, feeding and tuning. Simple series and parallel tuning.

Rotatable Mast for Beam Working, G3MOV. The design of a simple unit for manual operation is described.

Transistor Converter for Four Metres, G3SPR. A mini converter to suit a tunable i.f. of around 20 Mc. is described.

The ZL-1 Quad, G3PHQ/ZL2BDA. The 20 m. quad is one 1/2 wave on each side and the elements are spaced 7 ft. 9 in. apart. Both elements are driven. The author reports that skeds with friends G-land could not be considered satisfactory until he built this quad. After completing there was no trouble. Of course by shortening some elements it would be possible to make a quad for 40 which was no bigger than the usual 20 m. quad. What say someone? VK3AAR at Warrnambool is supposed to have one.

"73"

November 1968.

Computer Card Transmitter, K1EUJ. Plug-in components. (Grid leak does not plug in!!)

Crystal Filters, W3RET. The heart of s.a.b. This is an article which intrigued your reviewer greatly on a number of points. (1) The author is employed by McCay Electronics. (2) He speaks of so-called ideal characteristics such as 5 to 60 db. shape factors of about 1.5 or less. (3) McCoy Electronics advert on p. 15 quotes the Silver Sentinel 32B1 and Gold Gardian 48B1 shape factor 6 to 50 db. 1.5 to 1.8.

Pop ups are shown about 45 db. down on the 32B1 and 55 db. down on 48B1, showing that the ultimate rejection is worse than the figure quoted by the author as desirable and since McCoy have sold some for some time, one would believe, attainable. Maybe it is a strong argument for the home grown product which, although it may not be better than the highly advertised U.S. line, is cheaper and no doubt more reliable.

Trouble Shooting Solid State, K3PBY. Modern day problems solved—the author discusses methods of trouble shooting solid state circuits.

I.C. Frequency Counter, WB6IBS. Easy to build counter for Amateur applications. An interesting article for the ardent solid state

fan. The author claims the 20 Mc. counter can be built with \$120 (U.S.) worth of semiconductors, etc.

Constant Transformers for Ham Applications, W3CQN. Constant voltage transformers are very useful devices and with most pieces of equipment are very useful for maintaining a constant voltage in the shack. Notwithstanding this, some equipment specifically fitted with electronic dc regulators does not like to be subjected to the waveform distortion inherent in the output of a c.v.t. Voltage should be measured by a moving iron meter or current by moving iron, hot-wire, or thermocouple type r.m.s. reading instruments.

A Space Communications Odyssey, KEBW. It isn't going to be easy to keep in touch. Perhaps one should ask him if space travel is easy?

Surprise in the Skies, W1EZT. Pulsars—what are they?

Using Thin Wire Antennas, W2EEY/1. Fooling the neighbors on what the eye does not see the heart does not grieve.

A 7 Mc. Transistor Transmitter, W4JND. An all transistor rig for 40 mx running 8-10 watts input and with a t.r.f. receiver in the same box. Battery operation all summer from one 12v. car battery. This seems a good place for one of those small 1/2 wave converter type superhet rx's with b.f.o.

Double Conversion of the BC454M, VU7TV. By using the i.f. strip at 85 Mc. from a BC453 he double converts his BC454 and makes it suitable for s.s.b.

The Generator, W5AJZ. A "do all" test set for receiving. The name on close investigation comes from "Generating and Tracing". According to the author it does what he says it will—all solid state too.

Harness Your Wiring, K5LL. A professional wiring harness for home-brew of lovely, laced loops.

Copper Wire, W1EZT. The forgotten component. The author discusses wire conductivity of various metals and alloys, wire gauges, etc.

W1CPC Says You Can't Take It With You? WB6ABM. Or taking the Amateur station to college.

The Thermistor, WB6BIB. How to use this device for measuring purposes, especially temperature measurement.

Using S.C.R. in R.T.T.Y. Series Wound Motors. WENI. Series type dc machines with series type drive motors with a contactor and governor and consequent sparking at the contacts, which interferes with reception. Our hero used an S.C.R. to conquer the demon problem.

New High Voltage Transistors, K3VKC. The author lists type numbers with BV_{CEO} from 90 to 1000v.

FAIRCHILD INSTRUMENTS

Details will shortly be released of the range of Fairchild instruments available in Australia direct from Fairchild.

The Fairchild instrumentation range offers industry a broad line of digital multimeters, panel meters, electronic time and frequency measurement instruments and a curve tracer that is fully programmable.

The following instruments will be available:

Model 7050—A low cost digital multimeter.

Model 7000—A half rack digital multimeter.

Model 7200—An integrating digital multimeter.

Panel mounting digital meters:

Model 8040—A low cost frequency meter.

Model 8050—A 30 Mc. frequency/period meter.

Model 8220—A 500 Mc. digital frequency meter.

After-sales service will be provided and all information is available, specifications, etc., can be obtained by contacting Fairchild at their Croydon, Victoria, production plant, or any of the Fairchild representatives.

1969 Annual Report to Federal Council

The Federal Council of the W.I.A., Gentlemen,

PREAMBLE

I present to you, on behalf of the Federal Executive, a report on its activities during the period subsequent to the 1968 Sydney Federal Convention, as required by section 33 (iv) of the Federal Constitution.

The report follows the six sections traditionally used to classify motions at a Federal Convention, and deals with each section in turn. For each matter, where possible, I present a statement in the following form:—

- (a) Institute policy.
- (b) Subsequent actions.
- (c) Future determinations.

In beginning this report, I wish to state that I have throughout referred to "Executive" or "members of Executive" in relation to the matters attended to on behalf of the Institute. I have done so because I feel that W.I.A. officers, except a少数, do not wish to be identified with the organisation. The satisfaction gained is gained because the organisation is strong and active. I believe that any kudos attracted by actions of W.I.A. officers should attach to the W.I.A.

Of course, it is a corollary that the organisation cannot progress without hard work being done by its honorary officers, and administrative staff. To the members of Executive who have given me, and I therefore the Institute, such support, I am grateful and thankful for a job well done!

1968-69 FEDERAL OFFICERS

Federal Executive—

President: John Battrick, VK3JOR.
Vice-President: Michael Owen, VK3KI.
Federal Secretary: Peter Williams, VK3LZ.
Federal L.T.U. Liaison Officer: George Pither, VK3VX.
Federal Treasurer: Kevin Connolly, VK3ARD.
Executive Member: Alf Seedsman, VK3AFJ.
Federal Activities Officer: David Rankin, VK3QV.

Federal Co-ordinators of Activities—

Federal QSL: Ray Jones, VK3RJ.
Federal Tax: David Wardlaw, VK3ADW.
"Amateur Radio" Editor: Ken Pincott, VK3AJF.
Federal S.W.L: Eric Treblecock.
Federal Awards Manager: Geoff Wilson, VK3AW.
Federal Contests: Neil Penfold, VK6ZDK.
Federal W.I.A. R.S.: Jim Webster, VK2ZCW.
Federal Repeaters: Chris Jones, VK22DZ.
Federal Historian: George Glover, VK3AG.
Oversense Publications: Alf Chandler, VK3LC.

Immediate Past Federal President—

Max Hull, VK3ZS.

Section I.—CONSTITUTIONAL MATTERS

PROPOSED NEW FEDERAL CONSTITUTION

It was reported to the last Federal Convention that the solicitors acting behalf of the Institute in relation to this matter had said that further delay was likely. In the course of this year Executive was advised by the solicitors that, except in relation to four major items, the articles to be drawn up had been agreed by the Attorney-General's approval. With one exception, the matters were of a minor machinatory nature. The only troubling aspect was relation to the proposed postal referendum. The position was that the Institute had received the request of the N.S.W. Division and had been the subject of extensive debate.

The matter has been referred to the Divisions for instructions. Once the Divisions are in agreement as to what course is to be adopted, Executive is confident that this long outstanding matter can be finalised. An appropriate motion has been submitted to Federal Council for consideration at the Federal Convention:—

Motion 1969 1.1: "That this Federal Council formulate an instruction to the W.I.A. solicitors to enable them to proceed with the submission of draft memoranda and articles of association to the Attorney-General".—Moved F.E.

EXISTING FEDERAL CONSTITUTION

During the year, Federal Secretary has undertaken a great amount of research through book records and the Institute in order to check the exact constitutional position at this time. Executive will prepare copies of the present Federal Constitution embodying all past amendments and being completely up-dated. Federal Council will also have a copy of the existing Constitution in common form.

A number of motions referring to amendments of the present "old" Constitution will be before the 1969 Convention for discussion, and I commend to you a perusal of Section X, which lays down the procedure to be adopted if it is wished to amend the existing Constitution.

Section II.—POLICY ITEMS

"AMATEUR RADIO" MAGAZINE

(a) Policy 1968/2.1: "That the cost of 'Amateur Radio' to the Divisions be increased" was moved by the publishers, the Victorian Division, who sought an increase in the cost to members of five cents per copy. This would have increased the cost to non-members from twenty cents per copy. However, after long debate, this motion was lost. Following that motion, the Queensland Division introduced two "motions arising":—

2.1.1: "That a sub-committee be formed to urgently investigate all aspects of 'Amateur Radio' production comprising representatives from VK3 Division and Federal Executive," and also:

2.1.2: "That the cost of 'Amateur Radio' to Divisions be increased by twenty-four cents per member p.a."

These two motions were carried by majority.

(b) Subsequent Action: The Publications Committee of the Victorian Division has increased the cost to members from fifteen to seventeen cents per copy for 1968-9, and the effect of this will be a matter for F.E. report and financial statement. Executive appointed Federal Vice-President VK3KI to convene a sub-committee as directed by 1968/2.1, and he was joined by Federal Treasurer VK3ARD, Victorian President VK3YVQ and the Editor of "Amateur Radio". The sub-committee undertook a very detailed investigation, over a period of six months, of all aspects of publishing "Amateur Radio". The committee has concluded its investigation and recommended two motions to Federal Council. The convenor stated that he was satisfied that the Publications Committee was doing a most demanding job in a most responsible way. He thanked the Editor and VK3 President for their hard work in the matter over the six months, and also thanked Don Watson, VK4DZ, who sent quite a lot of constructive material and comment to the committee.

During the time the sub-committee was carrying out its investigation, liaison was maintained between Federal Executive and the Division publishing the magazine on behalf of Federal Council. Both the VK3 President and the Editor of "Amateur Radio" attended Federal Executive meetings and discussions pertaining to "Amateur Radio" and the Executive was at one stage asked to state its views on the future of "Amateur Radio", which it did in the following resolution:

"Federal Executive acknowledges the vast number of amateur radio clubs and individuals for submission to Divisions by Ken Pincott. Federal Executive does not presume to direct the publisher in relation to the future of the magazine, but suggests that the following points should be acceptable:—

1. The magazine should continue to be published.
2. Any arrangement by virtue of which the provision of working capital is not a burden on the Institute or on a Division is desirable, subject to the retention of editorial control by the Institute.
3. Any arrangement should result in some profit to the Institute.
4. F.E. recognise that the negotiations towards these ends must be left in the hands of the publishers."

The sub-committee investigated and reported on:—

- (a) "Outside" publication of "Amateur Radio".
- (b) Actual costs of "Amateur Radio".
- (c) Future costs of "Amateur Radio".
- (d) Letter from VK4DZ.
- (e) General matters.

The sub-committee reached the following four general conclusions:—

1. That "Amateur Radio" in anything like its present form cannot reasonably be produced more cheaply by other methods by other printers.
2. A partial solution lies in the future exploitation of the advertising potential of the magazine, and to achieve this it is economical to utilise the services of a specialised advertising agency. This had already been done.
3. That if Divisions wish Divisional Notes to be restored or any other feature to be added, this will involve additional cost to the Division. Note that in the last resort this is a decision for the Divisions, as in fixing a price the Divisions must accept responsibility for the magazine content.
4. It seems likely the costs will continue to increase. It will be reasonable for the publishing Division to continue to seek price increases. These cannot, at this time, November 1968 be quantified; all we can say is that we are satisfied that the cost increase cannot be absorbed.

During the investigation it became apparent that more data was needed by the publishers to assist them in making decisions relating to the magazine. Accordingly a questionnaire was included in "Amateur Radio"—this has been reported on in recent issues, and a "Federal Comment" in the last issue referred to the overwhelming response to an offer to supply a complimentary copy to a friend. A statement of costs of the magazine to W.I.A. members in comparison to the cost of direct subscription was also mentioned.

In addition to the material supplied by Queensland Division, N.S.W. Division made other comments which were referred to the sub-committee. One of these referred to the sub-committee of one publications to Federal Executive in relation to the proposed new Constitution. Another comment referred to the deletion of "Pubcom" reports from "Amateur Radio". Executive passed this matter to the Editor and VK3 President, his reply was forwarded to the N.S.W. Division.

During the year, Executive has continued to use the official organ of the Institute to inform members on various matters.

(c) Future Determinations: At the 1969 Canberra Convention, the Publications Committee of VK3 Division will report on last year's activities, and it is hoped that Federal Executive will be in agreement on the future of the "official organ" of the Institute. I believe that any agreement must be realistic from the economic point of view, if Federal Council with one Division to publish on its behalf, VK3, the publications division, will again move that: "The price of 'Amateur Radio' to Divisions be increased."

The aspect of publication of "Amateur Radio" by Executive raised by VK2 Division during the year will have to await the adoption of the Institute of the proposed new Federal Constitution. As pointed out earlier Executive has asked for instructions on this constitutional aspect.

YOUTH RADIO SCHEME MATTERS

(a) Policy: These matters were raised at the 1968 Convention as a result of motions moved by the N.S.W. Division, viz:

1968/2.2: "That Federal Convention confirm that the title of the Y.R.S. 'Youth Radio Club Scheme' be changed and that the title be an educational instrument of the Wireless Institute of Australia for the promotion of radio and electronics in schools and clubs."

1968/2.3: "That in view of the fact that so many members of the Youth Radio Club Scheme are not members of the Wireless Institute of Australia, that the Federal Convention

(b) Subsequent Action: Letters and expressions of thanks for the action of the Institute in the W.I.A. Congress were received from overseas countries. The delegates from J.A.R.L. made a presentation to the Federal President of a Yaesu Muser FT-DX-400 transceiver which was received by the Institute and placed in the Institute's station. All participants in the Congress and Convention expressed their appreciation of the excellent facilities and gracious hospitality provided by the Institute. Federal President thanked the W.I.A. for its organisation of the facilities and hospitality which were very appropriate to the occasion.

Following the Region III. Congress, Federal Executive was faced with a situation from the Congress which amounted to little more than a broad expression of general policy. To a lesser extent, the motions passed by Federal Council dealing with these matters could be categorised in a like manner.

It was, at least, clear that the "aim" was to augment "Secretariat" and "consultation" with the W.I.A. Director. Of immediate concern to us was the fact that the participating Societies had undertaken to provide funds for the new organisation. These monies were to be remitted to the W.I.A. as providing the Secretariat.

The Executive took advice on the matter generally, and were told, firstly, that no "Club" or similar organisation could exist apart from the "Region" or other national "club" and the "statement" from the Congress in Sydney did not "create" any organisation. Secondly, if monies were collected on behalf of a non-existent organisation and then expended (even though the monies were collected in the W.I.A. and, more particularly, at the personal risk of those officers of the W.I.A. who authorised the payment).

It was also pointed out that if money was merely collected and accumulated, difficulties could arise as to what to do with those funds if, in fact, the organisation did not come into existence. In the context of our position in South East Asia, it seemed that we could not afford to disregard this advice. Federal Executive felt that it was vital to ensure that the success of the Sydney Congress was built upon, and recommended that a more cautious approach was required to turn that Region III. organisation into an actual working body.

At the outset, we ourselves were somewhat unsure of the problems involved, and felt that the best way to deal with the situation was simply to go ahead and carry out what we believed to be in the intention of the Congress and the Federal Council.

At the outset, the Executive appointed myself as the W.I.A. Director, believing that this was the logical extension of my position as Federal President, at least in the somewhat difficult initial stages.

The other members of the Secretariat were Peter Williams (Secretary-General), Michael Owen, David Rankin and David Wardlaw. We propose that as the Region III. organisation was not in formal existence, we were really a sub-committee of Federal Executive, appointed to deal with the matter, but we felt it important to recognise the decisions of the Congress, and by calling that group the "Secretariat" we were able to preserve faith with the overseas Societies involved.

We then settled down to the long and tedious task of formulating an interim constitution. Our initial concept was to have the constitution mainly re-inforced by the return of the Nippon Bank to permit J.A.R.L. to remit funds out of Japan without the production of an appropriate constitution.

Our efforts at an interim constitution failed to obtain unanimous support. (A copy of this first constitution and the covering explanatory letter was annexed to the copies of this report as submitted to Federal Councillors.) We then proceeded to print a copy of the proposed series of amendments were formulated based on the suggestions of both I.A.R.U. Headquarters and the other member Societies involved. (These amendments were set out in the report and this report as submitted to Federal Councillors.) We believed that an interim constitution incorporating these amendments will be acceptable to all the Societies concerned, and therefore we have reprinted the constitution with the proposed amendments. (A copy of this re-printed constitution was also annexed to this report.) As I say, I believe that this interim constitution will be acceptable to the other Societies in the Region. I am, however, awaiting a Federal Council for its approval. If Federal Council does so approve, I have every hope that within six weeks we shall have an interim constitution in existence that will enable the Region III. organisation to commence real operation.

There are two comments that I should make. I stress that the constitution we are presently proposing is a minimum measure necessary to enable the Region III. organisation to come into existence. The adoption of a final constitution will be the primary task of the next Plenary.

The adoption of the interim constitution, however, is widely diverging view. We must not under-rate the difficulties of resolving these divergences at the next Plenary.

The adoption of the interim constitution has involved us with much correspondence, and has in this brought us closer together, both with the other Societies in the Region and with I.A.R.U. Headquarters.

I have not dealt with the details of the proposals contained in the interim constitution. These are adequately set out in the material annexed to this report. This material also illustrates the vast amount of work that this task has involved.

Our aim has been to produce flexible rules with sufficient detail and procedure to meet the needs of our members if it ever became necessary, the procedural validity of what we have done. In considering these rules I urge you to remember that we were bound to follow the structure envisaged by Region III. Conference. At the same time we tried to construct rules that could adequately apply to Radio Societies in different countries with widely different legal and social backgrounds.

As a result of our experience over the past year, I believe that another year would be required for the consideration of Federal Council. I feel strongly that the Region III. Association (as it is to be called) represents the area of the Executive's greatest achievement in the past year. I believe that the integration of this activity with the Federal Executive's other activities is essential and entirely consistent with the function of the Executive.

Our main immediate aim as a member of the Region III. organisation should be twofold. Firstly, we must ensure that any final constitution adopted by the organisation is workable and conforms with the aims of the I.A.R.U. and the aims of the W.I.A. Secondly, we must prepare for the next Frequency Allocation Conference of the Region III. organisation, to advance the interests of all Amateurs in all countries in the preservation of Amateur frequencies.

I believe that the Region III. organisation will be one of the most important aspects of W.I.A. activity for at least the next five years. The decisions of the Federal Council at this Convention as to how we are to achieve our aims in this matter will be, in my opinion, vital.

(c) Further Determinations: Executive has submitted the following motions to Federal Council for instructions on various aspects of this section. That—

1969/41: "The Federal Council ratify the action taken by the Federal Executive to date since the last Federal Convention in relation to the I.A.R.U. Region III. organisation."

1969/42: "The W.I.A. approves the I.A.R.U. interim constitution."

1969/43: "The Federal Council determine a policy in relation to the appointment of W.I.A. Region III. organisation Director."

1969/44: "The Federal Council approve in principle F.E. officers also holding positions on the I.A.R.U. Region III. organisation Secrетariat while Australia is providing the same."

1969/45: "Federal Council to what is to be done with any surplus collected pursuant to motion 4.1.1 of 1968 for the I.A.R.U. Region III. organisation."

Section V.—P.M.G. AND REGULATIONS

Only one motion in this section was passed at 1968 Convention:

1968/5.2.1: "That Divisions undertake to advise members of the existence of a gentlemen's agreement in relation to operating modes of c.w. and phone."

This was a P.M.G. motion from one to "request the P.M.G. Department to regulate the amateur bands between telephone and c.w." The motion as presented was lost, and the above motion arising (5.2.1) was carried instead. No action was required of Executive by that motion.

Some other matters, however, were taken by Executive to the Department, as it is Executive's policy to approach the P.M.G. Central Office on any matter which it feels may result in the granting of additional facilities to the Amateur Service, whether instigated by Federal Council or whether brought forward by one Council. So this appears an appropriate place for me to report to you generally on representation undertaken with the Department by the Institute.

Firstly, may I say that the Institute still enjoys excellent relations with the Post Office. I believe that this is because of the strength of Australia's Amateur Service, which is showing that it is viable, energetic, progressive, and above all, united. If we may take the point of little further, I am very concerned that we may at times forget the ultimate objective of the "Institute" (defined as the Federal Council, Federal Executive, and the Divisions, together) that is to represent the Amateur Service and ensure that operating conditions and frequency allocations are as liberal as possible to ensure the continued interest in our hobby, and therefore our survival. I believe there is a danger that we may place the achievement of this objective above that of greater significance than this ultimate objective. I personally consider it is the duty of every W.I.A. officer as an ultimate objective to preserve the W.I.A. as a viable society able to represent the interests of the Amateur Service—especially to the Australian Post Office.

Shortly there may be a necessity to join in preliminary discussions pertaining to the forthcoming Frequency Allocation Conference. We must present a strong, united voice at such discussions. My concern is that we may place matters out of perspective and fail to see the effect of some proposed action on the preservation of the amateur bands. I am also concerned that the threat of unilateral action to achieve some immediate objective may jeopardise the unity and strength of the voice of the Amateur Service.

Following our successful Convention/Congress last year the Postmaster-General, the Hon. S. A. Hulme, replied to my letter of thanks and said—

"I am pleased to note your appreciation of Post Office participation in the meetings and discussions of the Frequency Allocation Conference, particularly those dealing with matters concerning the establishment of a Union of Region III. Amateur Societies. I wish you and the members of your Institute every success in furthering the aims and objectives of the Amateur Service."

May I ask you to ponder on the aims and objectives of the Amateur Service, the W.I.A. and W.I.A. officers. There should be no cause for alarm to be placed in such a poor perspective that the ultimate objectives are lost sight of!

V.H.F. REPEATERS/TRANSLATORS

During 1968 the Tasmania Division provided a report with a detailed case for an unattended repeater system in their State. Executive had previously been concerned with translators in relation to Oscar/Australis experiments, and with repeaters in relation to V.H.F.N. activities. Some excellent material on repeat/translator systems was supplied on request from A.R.R.L. and other overseas Societies, and cases in relation to beacon translators were familiar to Executive.

Executive discussed the above matter of the repeater with the P.G.C.'s Controller Radio Branch, and the results of negotiations were publicised to Federal Council and members generally, as follows—

"Agreement has been reached with the Department in relation to repeaters/translators as follows:

"(i) The Department will approve the use of repeaters/translators in v.h.f. Amateur bands either on an experimental basis or on a permanent basis and immediately."

"(ii) Such repeater or translator may either re-transmit within the same band or to another band. It is anticipated that such equipment will be operated on frequencies below 144 Mc. those frequencies may be given to their use in the 6 metre Amateur bands."

"(iii) Any application (to be made to the Superintendent Radio in the State concerned) will be considered on its merits and the Department will have regard to the following points:

"(1) The number of translators permitted will be restricted to avoid undue interference in Amateur bands."

"(2) The Department will require to be satisfied that the design and construction of the particular repeater or translator and the permission to operate is sought is of a satisfactory technical standard though reasonable allowance will be made for experimental trials."

The following additional technical points should be noted:

"(a) The equipment should include arrangements for 'fail safe' operation, i.e. the equipment will not cause the transmitters to lock on."

"(b) The equipment shall be adequately and regularly maintained. A record shall be kept of all essential meter readings obtained during each maintenance visit, the repairs, adjustments and other maintenance undertaken and the purpose of operation (i.e. the times of

switching on and switching off of the translator.

"(c) Any form of modulation appropriate to the band in use may be employed. Where stronger forms of transmission, such as speech, should be provided to avoid modulation in excess of allowable limits as a function of received signal strength.

"(d) No transmission shall take place in the absence of a received carrier or if so desired, voice or other modulation intended to convey intelligence.

"(e) The Department will have to be satisfied that a permanent installation is desired by a reasonable number of Amateurs in the area concerned.

"(f) Net frequencies or other normally frequented band areas shall be avoided for both input and output channels of repeater/translators. There were discussions in agreement among Amateurs regarding such usage.

"(g) The Department will have to be satisfied that the equipment is safe from unauthorised operation and can be quickly turned off in case of malfunction.

"(h) The site chosen must be acceptable to the Department. Amateurs and repeater frequencies shall be as approved by the Department.

As the Amateur Service is a secondary service in bands above 144 Mc., some restriction may be necessary in respect to the use of specific channels by the amateurs.

"(i) Permission to use such equipment will be granted on a basis somewhat similar to the licensing of a radio club—namely, one individual Amateur will be nominated as being responsible for the operation of the equipment.

"(j) To avoid the need for repeaters/translators to be fitted with station equipment for identification purposes, stations communicating through them shall include in their calling procedure an indication that they are operating through a particular repeater/translator.

"It is anticipated that all State Superintendents Radio will be aware of these arrangements presently. As the implementation of these arrangements may bring to light difficulties that have been overlooked, some delays could occur.

The Department suggests that, wherever appropriate, the local W.I.A. organisation be co-ordinated in application of this suggestion that persons seeking the use of these facilities should not hesitate to make personal contact with the appropriate officer in their State, to ensure the fullest possible mutual co-operation.

General: Once again the Institute was treated with great consideration by the Department. We feel our relationship with Mr. Corlett could not be more cordial. As is obvious numerous difficulties surround the problem of v.h.f. repeaters/translators. We feel the solution set out above is eminently reasonable.

Following the distribution of the information to members in "Amateur Radio," a general desire arose for a meeting to co-ordinate this new facility. A meeting was arranged, and held in Wodonga. Members from VK2, 3, 5, and 6 attended and Divisions requested Executive's participation.

Executive members attended, acting as chairman and secretary. The meeting published detailed minutes and because the meeting had been adjourned, Executive later circulated postal motions, based on agreements made at the Wodonga meeting:

"(A) That the following policy be adopted in relation to repeaters/translators in Amateur bands—

1. (i) A service translator is a translator designed to receive signals on one frequency using channels A, B and C and with the intention of extending the range of simplex operation;

(ii) An experimental translator is a translator for experimental purposes designed by specially designed equipment and not intended to provide a use for normal operation;

2. The primary frequencies for service translators shall be 145.76 Mc. input and 147.76 Mc. output, and the secondary channel shall be 146.1 Mc. input and 145.6 Mc. output with 145.2 Mc. input and 145.7 Mc. output, and 145.3 Mc. input and 145.8 Mc. output, all designed for future expansion of service translator facilities subject to prior national agreement.

3. The frequencies for experimental translators shall be 145.76 Mc. input and 147.76 Mc. output, and 145.2 Mc. input and 145.76 Mc. output. Can be 145.0 Mc. input and 145.1 Mc. output.

4. All translators shall be designed for a deviation of plus or minus 15 Kc.

"(B) That the following policy be adopted in relation to net frequencies—

1. That the primary national simplex 2 metre f.m. frequency be 146.00 Mc.

2. That the primary national simplex 5 metre f.m. frequency shall be 52.325 Mc., but

the 52.656 Mc. and 53.950 Mc. frequencies may be used as alternative State channels. 3. That the VK2 Division shall act as a Secretariat for the co-ordination of net frequencies including translator frequencies.

Voting on these motions resulted in the affirmative by all Divisions. One point which was discussed was in relation to the status of a Secretariat. Executive has put the view that for administrative purposes it is necessary to co-ordinate throughout Australia, irrespective of where the co-ordinating group or person is located in Australia, the activity should be under the control of a Federal Co-ordinator. This officer is responsible to Federal Council through Executive's Federal Activities Officer.

Executive feels that this follows established procedure—the matter has been raised by motion for the 1969 Convention.

APEX, JAYCEES AND OTHERS

"ON THE AIR"

At the 1968 Federal Convention, the following motion was introduced as general business 1968/GB3: "That the Wireless Institute of Australia co-operate as far as possible with the Apex Clubs of Australia in their suggestion regarding Amateur Radio contact with Apex Clubs in South-East Asia."

Executive was also independently approached by Apex regarding this matter for the same reason. This matter was raised with the Department, whose attitude was made clear and firm.

Executive suggests that in the past the Australian Red Cross Society and various other organisations have made approaches, both at a Departmental and at a Ministerial level for permission to use Amateur frequencies for similar purposes. The Department is totally opposed to what is proposed by Apex. Executive feels that "Jamboree on the Air" can be justified on the basis that one of the objects of that activity is to interest young people in Amateur Radio as a hobby, and the provisions of a communications facility, not only of the total object. In the case of other organisations, the express object of the exercise is the provision of a communications facility. The Department feels that if it makes an exception to the general rule of not co-operating with worthy organisations, it will find itself acutely embarrassed in relation to other applications. It therefore seems probable that any applications by Jaycees or Apex will not be successful.

OTHER MATTERS RAISED WITH F.M.G.'S DEPARTMENT

Several matters affecting particular Divisions were attended to by Executive during the year—including transmitter huts and 6 metre operation in Queensland, and matters of call sign allocation. Divisions have been informed of results of Executive's representations.

LT.U. CONFERENCE FOR SPACE TELECOMMUNICATIONS

This is scheduled to be held at Geneva in late 1970 or early 1971. Executive has written to the Postmaster-General advising that if an Australian co-ordinating committee is formed similar to the committee prior to previous LT.U. Conference, frequency assignments, our representative would be LT.U. Liaison Officer, VK3VX.

In writing to the Postmaster-General, Executive stated that with the Amateur Service having a major interest in the amateur s.h.f. range, it is essential that our LT.U. representative be given the opportunity for a hearing.

The Postmaster-General has replied to the effect that the Post Office will make all preparations required for this Conference. In so doing, it will co-ordinate proposals originating from sources within Australia, and co-opt for discussion as required representatives of service clubs, amateur stations, amateur groups and those of other countries which are to receive consideration at Geneva. W.I.A. LT.U. representative VK3VX will be supplied with a copy of proposals which may affect the Amateur Service when the time arrives.

Executive has submitted to L.A.R.U. Headquarters details of v.h.f.-s.h.f. activity in Australia, as requested.

Future Determinations: Quite a large number of motions were put to the 1968 Federal Council for its discussion. Undoubtedly Executive will be requested to approach the Post Office on some or all of these matters, or may be requested to represent Amateurs or amateur stations to the throughout the forthcoming year. In any case, Executive will continue to comply with Institute policy Item P.02 of 1961.

"That any facilities granted by the Postmaster-General are not refused by the W.I.A."

Section VI.—CONTESTS AND AWARDS

These activities are administered by Executive through Federal Activities Officer on behalf of Federal Council. Council directives from Convention are acted upon by the co-ordinator appointed by Executive, and so are usually the subject of report annually to Federal Council and therefore I will not report on contests or awards.

However, I wish to say a sincere thank you to the W.I.A. for being able to run our contests and awards—the many hours of checking and recording are very much appreciated.

Section VII.—GENERAL MATTERS

Motion 1968/6: "That the Wireless Institute of Australia in a form appropriate to Amateur Radio publicise the anniversary of the arrival of Captain James Cook in Australia 1770-1970."

Executive has some suggestions as to the implementation of this motion, but as a formal motion, requiring action on progress made before Convention, the matter will be deferred until the Convention.

1970 also coincides with the 60th anniversary of the Institute, commemoration of which is a matter before 1969 Convention for discussion.

Perhaps both can be suitably commemorated at the same time in accordance with Executive's instructions on these and other commemorative matters.

Motion 1968/GB1: "That the appropriate authority be approached for approval to mint a 5 cent stamp to commemorate the launching of the first Australian Amateur satellite—the Australis 1—and that the W.I.A.'s sponsorship of the project be recognised therein."

Past Federal President investigated the matter of commemorative postage stamp depicting that a communications postage stamp depicting Amateur Radio as a hobby, and the provisions of a communications facility, not only of the total object. In the case of other organisations, the express object of the exercise is the provision of a communications facility. The Department feels that if it makes an exception to the general rule of not co-operating with worthy organisations, it will find itself acutely embarrassed in relation to other applications. It therefore seems probable that any applications by Jaycees or Apex will not be successful.

Motion 1968/GB2: "That because of the overstatement of expenses of the Federal Convention, particularly in respect of the amount of payments of receipts and expenses relating to Federal Conventions, the detail of expenses be limited to costs relating directly to the Convention, incurable on behalf of the Federal Executive and the Countries. These do not include expenses incurred by Divisional observers and others which are directly refunded by Divisions or others."

In accord with instructions contained in this motion, Executive approached Postmaster-General and Institute Auditor with a detailed breakdown of 1968 Convention/Congress expenses. This will be a matter of report by the Federal Treasurer, but Executive wishes to state that the expenses of the International Radio Congress were met from funds accumulated as a result of overseas publications distribution by Executive to W.I.A. members.

The granting of commission to Amateur Societies to conduct contests is not an act of deliberate policy by A.R.U. Board of Directors. Executive believes that it was well spent in a way designed to advance Amateur Radio in this Region, and was pleased that no basis for fees on members, by way of per capita recovery, for the Region III. Congress.

Miscellaneous Motions:
1968/7.1: "That the term Hertz and its associated terminology be used in Institute publications at the discretion of the Publications Committee."

This matter was referred to the Publications Committee, who, at their discretion, appear not to be using the hertzian terminology. No action is required of Executive.

1968/GB4: "That Federal Executive report on the present position with regard to supply of 145.76 Mc. transceivers. Can be used by Amateur, and endeavour to arrange for early delivery to Divisions."

At a recent Executive meeting, Past Federal President tabled an updated draft of this motion. On the basis of this, Executive still appears to be a few additions required. The delivery date to Divisions is still indeterminate.

1968/GB5: "That Federal Council recommends to Federal Executive the appointment of Mr. Jim Webster, VK2ZCW, as Federal Co-ordin-

ster of the Wireless Institute of Australia Youth Radio Scheme."

Executive has acted in accordance with this Federal Council recommendation.

1968/GBT: "That the Divisions agree on a common form of application for membership for inclusion in the Institute's publication."

Divisions have provided information to the Publications Committee who published an insert to "Amateur Radio" for March to accompany a Form of Application. Some Divisions have commented favourably on the effect this has had on membership applications.

1967/GBT: "That the W.I.A. encourage members to meet foreign students in Australia, and invite them to visit Amateur Radio installations while QSOs with Amateurs in the student's home countries are in progress."

Executive has been unable to take any action in regard to this motion during the past year.

Resolution: "That a review of the Policy Book be not undertaken at Convention, but that Federal Councillors peruse the Policy Book during the year and communicate any suggestions to the Federal Secretary."

Executive has received no suggestions during the past year from Federal Councillors in relation to the Policy Book. Some motions before 1969 Federal Convention may require subsequent amendments to the Policy Book.

Venue of 1968 Convention: Extract from 1968 Minutes of Federal Convention:

"During 1967 VK7 invited Federal Council to come to Perth in 1969."

"VK2 referred to the cost of Conventions in VK6, and the fact that the last one was subsumed by the VK8 Division."

Federal Secretary suggested that Federal Executive and the VK6 Federal Councillor examine the aspect of the cost of a projected Convention in Perth and report to Federal Council.

"Resolved to that effect, with tentative agreement that VK6 be the next venue—depending on Executive's report on costs."

Executive discussed the matter with VK6 Federal Councillor, and in order to effectively report to Federal Council, felt it would be relevant to consider an alternative to Perth. Accordingly, an initial unofficial approach was made to members of the Canberra Radio Club

to provide some facts which could be placed before Federal Council giving an alternative venue to Perth.

A budget of costs for a Convention in Perth, as compared with a Convention in Canberra, was provided to Divisions in accord with policy of the Executive. Approval for Canberra as a Convention venue was received from all States.

The Constitution and Policy Book are silent on methods of determining Federal Convention venue—it is customarily held in Divisions in rotation and by invitation; however, the matter has been brought forward for discussion by Federal Council.

Membership: At the time of writing this report, membership figures are incomplete. The returns from VK6 and VK7 have been regular, but from other Divisions they are somewhat erratic. Executive would appreciate a report on February membership from each Division could be submitted at Canberra. Licensed Amateurs in VK totalled 5798 in December 1968.

Notable Achievements: It may be of interest to members to learn of some notable Amateur activity in the v.h.f.-s.h.f. range, carried out recently in N.S.W. and Queensland, on 1296 Mcs.

On 29th December, 1968, VK2ZCP/2 worked VK2ZAH over a 65-mile path. This bettered the existing Australian record, about 10 miles. On the same day, VK4KE/4 worked VK4KE/4 over 83 miles which also bettered the previous record.

On 5th January, 1969, VK2ZCP/2 worked VK2ZAC-71 miles—and VK4KE/4 worked VK4ZT/4 over 71 miles. VK4KE/4 on 2nd February, 1969, VK4KE/4 and VK4ZT/4 made two-way contact over a 138-mile path and this last mentioned contact will become the Australian record.

Personal Contact: During the year, some opportunities for personal contact between Divisions and the Executive were provided. VK5 Federal Councillor visited VK5 and New Zealand, and met with VK5 officers and also N.Z.A.R.T. officers. VK5 Federal Councillor visited Victoria and met with members of the VK5 Division. VK5 Secretary, VK5 Federal Councillor and some members met with members of Executive, and the VK5 Federal Councillor, at a Christmas Party arranged by Federal Secretary's XYL. Federal President and

Vice-President were invited by VK7 Council to visit Tasmania and discuss Federal problems with them. Federal President and his XYL were the guests of the VK2 Division at their annual Convention dinner recently. At the Wodonga regional conference, personal meetings between VK2, 3, 4 and 7 officers and members of Executive occurred.

These and many other opportunities for personal contact were taken by Executive, as we feel that often problems arise in our organisation through "breakdown of communications" between people.

Executive has placed before Federal Council a proposal for the direction the matter of N.Z.A.R.T.'s invitation extended the matter of Federal President to attend their Gisborne Convention in May 1969. Executive believes that it should seize all opportunities to visit Divisions and other countries, if invited.

Oscar-Australia Satellites: No report has been received from the group concerning these activities. However, we are informed by I.A.R.U. Headquarters that the general situation is best described as confused, and getting an Amateur satellite launched is not easy at all. The group, however, has been in discussion on the future among the Oscar group, and it is reported that a new group in the East Coast area has formed a body similar to the Oscar body with basically the same aims. This group will probably work closely with N.A.S.A., but things generally in U.S.A. are unsettled.

As Australia would rely on the provision of launch vehicles by U.S.A., the position in this country is therefore indeterminate.

Section VIII.—CONCLUSION

In concluding this review of the past year, I am sure that many members of the Executive must also concede that in respect of other matters we may not have always done things in a way that would be acceptable to all of you. However, we hope that Executive has performed an important role in the affairs of our Institute, and has contributed to the advancement of Amateur Radio both within Australia and internationally.

(Continued on Page 26)

WIRELESS INSTITUTE OF AUSTRALIA—FEDERAL EXECUTIVE

STATEMENT OF INCOME AND EXPENDITURE for Year ended 28th February, 1969

1967/68	1968/69
INCOME:	
\$215 Interest received	\$238.46
1,157 State Contributions—per Capita	1,223.70
317 Surplus Publication, Badges	485.27
Refund Expenses, Youth Radio Scheme	47.38
	\$1,995.81
EXPENDITURE:	
\$32 Audit Fees	\$31.50
133 Depreciation	154.00
R.D. Contest	6.50
52 Awards Committee	10.00
41 QSL Bureau	46.00
34 Contests Committee	28.01
39 Maintenance, Office Equipment	20.30
10 Floral Tributes	8.00
2 Postage	1.00
1 A.R.U. Expenses	75.00
168 Travelling Expenses	87.60
263 General Expenses	82.37
507 Stationery, Postage, Telephone	404.31
303 Subscriptions	579.10
16 Insurance	27.90
8 Interest, L.T.U. Fund	317.77
18 Y.R.S.	—
115 Australias	—
44 Badges	—
30 Subscriptions	—
	1,875.26
	Surplus for Year \$120.55
\$6 Deficit	

BALANCE SHEET as at 28th February, 1969

1967/68	1968/69
CURRENT ASSETS:	
Com. with Trading Bank—	
\$7,452 Federal Executive	\$1,467.84
987 Publications	38.98
— I.T.U. Fund	6,306.45
263 Sundry Debtors	334.88
442 Stock on hand—at lower of cost or market value	325.11
49 Prepayments	131.34
	\$9,447.60
\$9,383	
FIXED ASSETS:	
\$1,133 Furniture, Fittings and Equipment at cost less depreciation	1,213.27
\$10,526	
TOTAL ASSETS	\$10,660.87
Less	
CURRENT LIABILITIES:	
752 Reserve Fund	\$752.00
5,414 I.T.U. Fund	6,306.45
— Sundry Creditors	57.80
	7,146.05
\$6,166	
ACCUMULATED FUNDS:	
\$4,366 Balance, 1st March, 1968	\$4,358.16
— Add Surplus for year	120.55
	\$4,479.71
	Less Region III. Congress \$64.89
	\$3,514.82
\$4,359	

AUDITORS' REPORT

We have examined the books and vouchers of the Wireless Institute of Australia (Federal Executive) for the year ended 28th February, 1969, and our report on the accompanying Balance Sheet, drawn up so as to give a true and fair view of the state of the affairs of the Federal Executive as at 28th February, 1969, and the attached Statement of Income and Expenditure is properly drawn up so as to give a true and fair view of the results for the year ended 28th February, 1969.

Melbourne,
14th March, 1969

Hebard and Gunning,
Public Accountants

Book Review

WORKING WITH OSCILLOSCOPE

By C. W. Saunders

This rather large book of 104 pages measuring 9 x 8 1/2 in. devotes more than half the available space to diagrams and circuitry. It is this reviewer's opinion that the drawings are unnecessarily large and it is difficult to accept the somewhat unconventional style, although it must be admitted it is very distinct.

The first 32 pages are devoted to what are called lessons. These lessons outline the theory and operation on the oscilloscope, oscillographic methods, basic construction, vacuum tube time base generators and vertical deflection amplifiers. The remainder of the book comprises 26 projects, enabling the reader to apply the oscilloscope to practical experiments using the oscilloscope as test instrument, a large variety of applications. The book is liberally supplied with illustrations of the types of trace to be expected under various conditions.

TAB Book No. 472. Price \$US4.95.

THE TYPE 111D IONOSONDE

By L. I. McGarry and S. M. Campbell

It may be recalled that the purpose of this series is to make available information about aspects of the work of the Ionospheric Prediction Service Division, Bureau of Meteorology, which may be of some interest but would not normally be published in any scientific or technical journal.

The Australian Ionospheric Prediction Service uses various incoherent ionospheric sounders to obtain data for prediction and research purposes. One such sounder, the Type 111D ionosonde, was designed and built by the Prediction Service. This report gives the technical description of the methods used to sound the ionosphere and record the results on 35 mm. film. The report is illustrated with block diagrams and drawings.

Our copy from Ionospheric Prediction Service Division, Commonwealth Centre, Chifley Square, Sydney.

SEMICONDUCATORS: FROM A TO Z

By Phillip Dahmen

This book proved to be an extremely interesting and informative publication. The 28 chapters, totalling 272 pages with over 1000 illustrations, gives a wealth of information on the range of transistors and semiconductors in use today—from basic diodes and transistors to FETs, MOS-FETs, tunnel diodes, integrated circuits, phototransistors, light-emitting diodes and light-sensitive transistors, field-effect diodes, SCR and zener diodes, etc. It explains how these various devices work and how they are used, with complete descriptions of all the common and unique circuits used in modern semiconductor technology.

The content begins with a review of how basic semiconductors work, including types and function, how a transistor conveys a signal, basic techniques, effects of temperature, factors limiting frequency response, etc. Successively more complex devices are described, field-effect transistors by explaining the differences between FETs and regular transistors, junction FET applications, frequency response, temperature effects and depletion and enhancement type MOS-FETs.

Considerable attention is given to integrated circuit applications. The use of varicaps is also covered, as well as unijunction transistors, field-effect diodes, zener diodes, diacs, and triacs, etc.

TAB Book No. 483. The price quoted is \$US7.95 hardbound or \$US4.95 paperback. We are given to understand that TAB books are available from Robertson & Mullins in Melbourne.

SILENT KEY

It is with deep regret that we record the passing of the following Amateur:

VK3AO—George W. Baty.

Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the Publishers.

REMEMBRANCE DAY CONTEST

Editor "A.R.", Dear Sir,

Now that the results of the 1967 Remembrance Day Contest have been published in the new "Call Book", the writer has conducted a detailed investigation into the R.D. Contest rules to try and find a solution to make the contest a better one for all Amateurs, yet keeping to the expressed intention of the contest.

First of all it comes as a shock to find that the R.D. Contest, in its present form, is not a very democratic contest because approximately 200 licensed Amateurs cannot take part fully in the contest if they want to do so.

The writer has very carefully examined the 1967 R.D. Contest rules published in "Amateur Radio" July 1968, the Editorial by VK3SQV and the article by VK3TK in the August 1968 issue.

The rules commence, "A perpetual trophy is awarded annually for the highest total score in the 'A.R.'". Further on the same page, "VK1 scores will not be included with VK2, not VK8 with VK5," but in the Receiving Section: "VK1/VK8 and VK5/VK8 are considered to be the same areas for scoring purposes."

The "Call Book" page 36, shows that there are only six Divisions being New South Wales, Victoria, Queensland, South Australia, Western Australia and Tasmania.

Now for the purpose of Commonwealth administration, Australia and its Territories are divided into 10 call-sign areas, and to make things more complex, in some areas the call sign carries a different meaning to other call signs in the same political area, i.e. areas under the same State Government.

For instance, while Lord Howe Island carries the prefix VK2, being part of N.S.W., Macquarie Island carries the prefix VK8, although it is under the jurisdiction of the Tasmanian Government. Those living on Macquarie Island are entitled to vote in Tasmanian municipal elections, being considered Taswegians.

I am not sufficiently familiar with the internal administration of the W.I.A. to know if it is possible for the N.S.W. Division to score, but it is obvious from the rules that transmitting Amateurs in VK1, VK8, VK9 and VK0 (except where their domicile is in a particular State) cannot compete fully in the R.D. Contest.

My solution to this problem, therefore, is to create another Division to be known as the Territory Division, where all Amateurs in any Australian Commonwealth Territory would be included. The "Call Book" shows that there are about 200 such Amateurs.

It might be thought that administration of such a Division would be difficult, but the I.R.U. operates on a world-wide basis and I have no doubt that a reasonably sized Committee could make such a Division workable. Space does not permit going into details.

The second portion of the solution to the R.D. Contest problem is to include the registration of W.I.A. call signs in each Division's log, (VK1, VK8, VK9 and VK0 where applicable in the proposed Territories Division.)

Lastly, it is necessary to revise the formula and provide the following:

Average of top 12 transmitting logs plus average of top 6 receiving logs plus (Divisional logs entered divided by Divisional licences, multiplied by total points from all entrants). I believe that these suggestions would allow all transmitting Amateurs to participate to the fullest extent in the contest and make it more equitable between Divisions. It will be noticed that in the formula the word "State" has been replaced with the word "Division" and the reason is not between Divisions but between Divisions.

This proposal means that each transmitting Amateur and each W.I.A. registered S.W.L. has his individual score assistance in Divisions whenever possible the scores of VK1 and VK8 transmitting Amateurs are excluded by the rules, whilst VK8, VK9 and VK0 apparently cannot be included in present formula as they are not Divisions as required in the first part of the rule, and could not possibly receive scores. VK1, VK8, VK9 and VK0 can be attributed mainly to this factor as this exclusion does not contribute to great enthusiasm for the R.D. Contest in these call areas.

I firmly believe that this proposal is the most democratic so far proposed although it

cannot overcome the apathy in the R.D. Contest which appears to exist in some Divisions to a greater extent than in others.

—C. A. Cullinan, VK3AXU.

S.W.L. PARTICIPATION IN VK CONTEST

Editor "A.R.", Dear Sir,

After reading Mr. Treblecock's letter in the July 1968 "A.R.", I decided then and there that I would participate in the VK/ZL/Oceania DX Contest despite the fact that at that time I had had my Lafayette HA230 only four months and my countries tally was about 23.

I participated, listened for a total of 12 hours, and heard 100 stations for 4575 points, and sent in my entry. I was surprised and pleased to receive a certificate. However, the discovery that the VK listeners sent in an entry bitterly disappointed me.

Overseas listeners sent in entries with scores like 48, 24, 12, (UP2038, UC20081 and HA5133 respectively). Much as I would hate to see the ZL Contest Manager with work, I think it even lowers the listeners' spirit of the contest if even low-power listeners sent in an entry.

I may be forty years younger than Eric Treblecock, but I wholeheartedly sympathise with his feelings as expressed in his letter.

—Colin Kilduff, WIA-L2342.

DEFINITE SUNSPOT NUMBERS

FOR 1968

By M. Waldmeier, Eidgenössische Sternwarte, Zurich, Switzerland.

D. Ju. Fe. Mr. Ap. My. Jn. Jl. Sp. Sc. Oc. No. De.

1	119	208	108	122	130	130	55	98	78	75	85	100
2	123	211	110	108	144	134	37	91	82	73	79	109
3	126	199	92	98	143	121	50	92	119	108	76	113
4	137	170	86	96	138	114	26	94	118	119	81	116
5	152	137	77	89	127	115	28	94	111	118	97	113
6	150	114	67	85	142	129	41	95	96	125	92	117
7	164	86	58	79	135	138	54	100	99	125	92	118
8	182	97	67	82	128	119	89	113	116	122	102	130
9	200	95	65	92	122	103	91	96	128	87	103	130
10	196	92	74	104	117	99	99	90	138	70	111	75
11	154	89	65	95	106	124	104	145	95	100	101	101
12	144	76	67	83	102	155	112	116	150	99	94	101
13	138	67	60	91	108	147	142	153	70	74	75	77
14	107	69	67	96	110	138	115	113	76	85	81	81
15	94	87	59	110	92	107	123	172	89	90	84	84
16	78	85	46	114	103	103	120	84	84	84	84	87
17	68	64	59	91	113	111	117	160	81	82	82	77
18	60	78	59	63	121	121	96	148	105	108	77	83
19	58	65	53	53	133	107	123	88	112	80	101	101
20	55	72	60	63	140	103	93	122	84	114	92	92
21	55	79	70	64	142	103	93	90	122	84	107	107
22	69	82	61	68	94	94	95	143	99	134	91	114
23	75	93	113	50	149	101	93	126	118	136	70	114
24	82	119	132	48	165	113	101	108	149	137	67	125
25	90	161	143	64	146	111	124	86	187	138	80	131
26	87	150	141	50	121	107	130	77	184	133	89	140
27	88	126	146	57	133	103	127	67	176	138	87	145
28	144	124	138	62	133	111	118	49	146	118	73	139
29	175	126	127	71	135	149	129	64	137	114	73	139
30	185	154	96	126	85	115	68	91	122	83	119	119
31	209	134	138	63	93	63	99	117	117	117	117	117

Mean: Jan. 121.8, Feb. 111.9, Mar. 92.2, Apr. 81.2, May 127.2, June 116.3, July 96.1, Aug. 109.3, Sep. 117.2, Oct. 107.7, Nov. 86.0 Dec. 106.8.

Yearly Mean equals 105.9.

FINAL SMOOTHED SUNSPOT NUMBERS

July 1967	—	—	—	—	—	—	94.3
August 1967	—	—	—	—	—	—	95.4
September 1967	—	—	—	—	—	—	95.3
October 1967	—	—	—	—	—	—	95.0
November 1967	—	—	—	—	—	—	97.1
December 1967	—	—	—	—	—	—	102.6
January 1968	—	—	—	—	—	—	102.6
February 1968	—	—	—	—	—	—	102.9
March 1968	—	—	—	—	—	—	104.6
April 1968	—	—	—	—	—	—	107.2
May 1968	—	—	—	—	—	—	107.6
June 1968	—	—	—	—	—	—	106.6

Mean equals 100.8.

Commonwealth of Australia Ionospheric Prediction Service.

NEW CALL SIGNS

NOVEMBER 1968

- | | |
|---------|--|
| VK2FX | -F. W. Nairn, 2/25 Delmar Pde., Gladysville, 2111. |
| VK2AGV | -G. M. Dowse, 18 Davidson Ave., Woonona, 2517. |
| VK2AV | Albion High School Radio Club, Station: Penrith High School, Postal: 89 Great Western Hwy, Springwood, 2777. |
| VK2BJC | -J. Chessel, 2 Esplanade Court, The Esplanade, 2131, Alford, 2131. |
| VK2ZGT | -D. K. W. Bradbury, "Karana," Derrinwood, 2745. |
| VK2ZJA | -I. B. Bowman, 15 Akuna St., Kippax, 2500. |
| VK2ZJJ | -J. J. Davis, R.A.A.F. Base, Richmond, 2503. |
| VK2ZKI | -J. Thomas, 81 Hanbury St. Wentworthville, South, 2145. |
| VK2ZKV | -K. J. Cox, Sturt Hwy, Forest Hill, 2500, Warragul, 3200. |
| VK2ZLA | -J. L. M. Andrews, 49 Lord St., Roseville, 2069. |
| VK2ZML | -R. J. Mansfield, 33 Bundarra Rd., Belgrave Hwy, 2023. |
| VK2ZNN | -T. A. Dunn, 6 Pat Hargraves Pl., Maroubra, 2029. |
| VK2ZPZ | -P. W. Walton, Station: 99 Hardinge St. Deniliquin, Postal: P.O. Box 267, Deniliquin, 2710. |
| VK2ZSE | -S. Wilson, Unit 2, 76 Lauderdale Ave., Fairlight, 2094. |
| VK2ZMM | -B. K. Boardman, 108 Chelmsford Ave, East Lindfield, 2070. |
| VK3BRJ | -R. J. Russell, 1 Cedar Crt., Forest Hill, 3131. |
| VK3JACT | -T. B. J. Lakey, 32 Giles St., Mirboo North, 3871. |
| VK3JAE | -R. A. Hipwell, 57 Pier St., Dromana, 3936. |
| VK3JAK | -K. J. Echberg, Lot 10, Bahama Crt., Vermont, 3133. |
| VK3IAOZ | -G. O. W. Niele, 14 Elaine Crt., Springfield, 3171. |
| VK3JZD | -J. M. Shaw, Myrrne, Wangaratta, 3732. |
| VK3ZEW | -P. A. Stroud, Lot 38, Shelley Ave., Bayswater, 3133. |
| VK3ZQG | -P. G. McPhee, Flat 11, 65 Tivoli Rd., Smith Yarra, 3041. |
| VK3ZEP | -H. Birbeck, 35 Richmond St., South Blackburn, 3130. |
| VK4ADY | -J. D. Elshoff, Station: 351 Rode Rd., Cheshire, 3222, Postal: 384 Rode Rd., Cheshire, 3222. |
| VK4HO | -C. Churn, 1 Rolland St., North Ward, Townsville, 4810. |
| VK4MS | -A. L. Stehn, 210 Alma St., Rockhampton, 4700. |
| VK4KMC | -J. Griffiths, 1 New St., Nerang, 4211. |
| VK4MUW | -T. W. Marks, 22 Renita St., Aspley, 4034. |
| VK4NO | -E. T. Norris, 218 Hume St., Toowomba, 4350. |
| VK4OB | Rockhampton District Boy Scouts' Radio Club, Station: Seecoon Park, Rockhampton, 4700, Postal: Fitzroy St., Rockhampton, 4700. |
| VK4QG | -P. J. Murdoch, 29 Sixth Ave., Palm Beach, 4218. |
| VK4QF | -J. R. Godson, 35 Charles St., Gladstone, 4880. |
| VK4QT | -I. H. Campbell, 31 Kamaroo St., Manly, 4179. |
| VK4ZPZ | -J. E. Smith, 26 Birubi St., Coorparoo, 4151. |
| VK4ZTR | -T. Connolly, 28 Birubi St., Coorparoo, 4151. |
| VK4ZTS | -G. T. Schott, Woondi Rd., Bell, 4405. |
| VK5EML | -W. F. Dixon, 16 Mosterton Rd., Eliza-
beth, 2513. |
| VK5ZGZ | -E. W. Deakin, 109 French Tee, Port Pirie, 5540. |
| VK5ZKA | -P. R. Parise, 53 Enterprise Rd., Elizabeth, East, 5112. |
| VK5ZLB | -J. Button, 18 Price Ave., Klem-
mington, 5087. |
| VK5ZCE | -R. Sieber, 238 Victoria St., Haw-
thorn, 3062. |
| VK5ZCK | -R. L. Resek, 8 North Pde., Kings-
wood, 2600. |
| VK5ZCQ | -J. A. McLachlan, 7 Austral Tee, Morphettville, 5043. |
| VK5ZSL | -P. Lawson, 1 Doreen St. Prospect, 5082. |
| VK6ZDX | -A. P. Legg, C/o Morris Hotel, Inna-
loo, 6018. |
| VK6ZEE | -A. W. Pike, 6 Latham St., Alfred Cove, 6154. |
| VK6ZEP | -J. S. Thornett, 1196 Acanthus Rd., Robertson, 6155. |
| VK6JAF | -J. S. Siason, Station: 4417 Bulbul St., Ludmilla, Darwin, 5799; Postal: Box 2457, Darwin, 5794. |
| VK6JAZ | -B. B. Groom, 2012 Young Cres., Alawa, Darwin, 2700. |

CANCELLATIONS

- VK2AUW—P. R. Crothwaite. Not renewed.
 VK2BGG—G. J. Griffiths. Now VK4KC.
 VK2BII—J. H. Thompson. Not renewed.
 VK2BMMG—G. M. Browning. Not renewed.
 VK2BWRH—W. L. Rindone. Not renewed.
 VK2ZGK—C. E. Klippengen. Transferred Interstate.
 VK3HG/T—R. B. Russell. Now VK3BR/T.
 VK3VSO—R. J. Clark. Deceased.
 VK3JACO—St. Annes Science Club C.E.G.S.
 Sale. Cessated operation.
 VK3ZGK—A. J. Lakey. Now VK3ACT/T.
 VK3XNS—A. J. Bowdrie. Now VK3ZEW.
 VK4AD—A. D'Arcy. Now VK3FB.
 VK4BT—N. W. Atkinson. Not renewed.
 VK4ZCA—A. J. Chappell. Now VK4DY.
 VK4ZCI—I. H. Campbell. Now VK4TK.
 VK4ZCR—K. W. J. Hazel. Transferred New South Wales.
 VK4ZCZ—C. G. Dunn. Cessated operation.
 VK4ZCZ—T. E. Norris. Now VK4NO.
 VK4ZLS—P. L. Stehn. Now VK4IS.
 VK5DI—W. T. Lucas. Not renewed.
 VK5NC—K. G. Ellis. Cessated operation.
 VK5ZEA—C. Batty. Not renewed.
 VK5ZET—E. R. Tuchs. Not renewed.
 VK6ZEC—P. M. van der Velden. Now VK8ZKA.
 VK6ZG—P. F. Meekins. Transferred to N.S.W.
 VK6ZG—A. Nickson. Left Antarctica.
 VK6ZG—D. J. Meekins. Left Antarctica.
 VK6ZJW—J. G. Kaarsberg. Left Antarctica.
 VK6VK—V. J. Kliney. Left Antarctica.

DECEMBER 1968

- VIK1AD—G. M. Brown, Station: 5 Palmer St., Garan, 2605; Postal: P.O. Box 183, Manuka, 2603.
VIK1LF—L. B. Fisher, 7 Elder St., Braddon, 2602.
VIK1ZJH—H. Hyde, Station: 12 Perkins Pl., Torrens, 2607; Postal: P.O. Box 1271, Canberra City, 2601.
VIK2ADE—F. N. Leverrier, 21 Allambie Rd., Allambie Creek, 2605.
VIK2AGJ—C. P. Daw, "Woodlands", Wombat, 2595.
VIK2BAW—Cowra High School Radio Club, 6 Walker St., Cowra, 2794.
VIK2BEY—D. J. Williams, 100 Woodbridge, 25 Dromedary Cres., Linfield, 2070.
VIK2BRU—S. A. Brunette, 51 Doran Ave., Buttaba Heights, via Rathmines, 2283.
VIK2BV—V. A. Roachfort, 1 Hemingway Cres., Eastwood, 2122.
VIK2ZZD—D. J. Williamson, 16 Market St., Bankstown, 2200.
VIK2ZFH—A. C. Counsell, 11 Allandale St., Bankfield, 2322.
VIK2ZZE—B. S. Simpson, 21 Glendower Ave., Eastwood, 2122.
VIK3AZ—J. D. Lund, 93 Dalny Rd., Murrumbeena, 3163.
VIK5CW—P. A. Dennison, Station: 44 Johnston St., Oaklands Park, 5046; Postal: Dept. of Physics, University of Adelaide, Adelaide, 5000.
VIK5DZ—J. G. Roth, 75 Charles St., Prospect, 5002.
VIK5PA—P. A. Matthews, 11 Gurr St., Goodwood, 5034.
VIK5QG—E. Southgate, 203 Wright Rd., Whyalla, 5600.
VIK5ZT—H. J. Cunningham, 59 Teusner Dr., Morphett Vale, 5162.
VIK6FR—R. F. Frost, C/o, N.A.S.A. Space Tracking Station, Carnarvon, 6701.
VIK6GT—D. Bedwell, 44 Pandora Dr., City Beach, 6017.
VIK7WX—G. G. Garton, 5 "Santa Barbara", Hastings St., Scarborough, 6019.
VIK6ZG—C. P. Cornish, Station: Carnarvon; Postal: P.O. Box 56, Carnarvon, 6701.
VIK7RR—D. J. Morgan, 110 Hampden Rd., Hobart, 7000.
VIK7TC—Hobart Teachers' College Electronics Club, 2 Edward St., Glebe, 7000.
VIK7ZC—D. J. Morgan, 9A Philosopher St., Savage River, 7221.
VIK8DA—Darwin Radio Club Incorporated, Station: 1 Kerin Pl., Rapid Creek, 5792; Postal: P.O. Box 1897, Darwin, 5794.
VIK9KJ—K. J. Edwards, 1000A, Kitebeam Prediction Service Station, P.O. Box 31, Cessnock (Kitebeam), 2366, Illawarra Coast.

CANCELLATIONS

- K2H1—A. H. Brodrick. Transferred to N.T.
 K2HJK—J. S. Vandy. Not renewed.
 K2WQH—H. F. Owen. Not renewed.
 K2ZBZ—H. C. Koenig. Now VK1LF.
 K2ZBRP—R. C. Froberg. Not renewed.
 K2ZFT—T. L. Harrison. Transferred to
 W.A.
 K2ZGQ—G. V. Comber. Not renewed.
 K2SSB—S. A. Brunette. Now VK2BRU.
 K3AZ—A. E. Award. Not renewed.
 K3MK—D. Lundy. Now VK3AZ.
 K4AYH—H. A. Dill. Not renewed.
 K4LNN—N. L. Sieberg. Ceased operation.
 K5ZBB—J. Langdon. Transferred to N.S.W.
 K5ZBBM—M. R. Haskard. Ceased operation.
 K5ZDH—R. A. Jackson. Ceased operation.
 K5ZPWN—M. J. Williams. Now VK2DZ.
 K5ZPN—A. P. Matthews. Now VK3SPA.
 K5GJD—H. R. Gedde. Deceased.
 K5ZEF—R. Frost. Now VK5FR.

WIA ANNUAL REPORT

(Continued from Page 24)

One feature of the year under review has been the stringent criticism the Executive has received from one Division. I do not believe that that criticism has, on all occasions been unjustified, but I consider that it has been directed at that Division. The effect has been to divert much time and energy from productive activities to the, at times, seemingly interminable discussion of minor, often trivial, small matters to an importance they do not justify.

So, for the forthcoming year, we seek the consideration and understanding of all the Divisions. To expect the best from honorary officers subject to the unremitting pressure of the past year is unrealistic. There must be occasions when there is a legitimate and justified difference of view between a Division and the Executive, as there must be between Division and Division.

To resolve these differences, to reach agreements, to advise Executive in the execution of these agreements is the purpose of a Federal Convention. Except in the most unusual cases, these cannot be satisfactorily resolved by the unilateral exercise of non-constitutional power by one Division.

In the forthcoming year, then, let us all try to avoid a repeat of the past. Let us all strive for greater understanding and understanding among us. Above all, remember that in most cases there is room for two quite legitimate but different views on the same subject, but proper procedures can exist whereby one part of the Institute can attempt to convince the other. Let the executive seek the personal support of each Federal Councillor, who above all we believe should not engage in actions that are, whether justified or not, destructive of the Institute as a whole. We also hope that all parts to the Institute will submit their personal, divisional, or other unique viewpoints in the interests of the Institute as a whole, and allow the Institute as a whole to use its established procedures to determine for itself what is in the best interests of the "Institute". There is only one Institute—we are all parts of it. No one part of the W.I.A. is greater than it. No, the W.I.A.!

In summary, gentlemen, I believe that this Executive has generally acted vigorously and competently as the Executive body of the Institute over the past year. In spite of difficulties, much has been achieved. However, we do not feel that we have always been given "fair go"!

B. BATTRICK, VK3OR
Federal President, W.I.A.

TECHNICAL ARTICLES

Readers are requested to submit articles for publication in "A.R.," in particular constructional articles, photographs of stations and gear, together with articles suitable for beginners, are required.

VHF

Sub-Editor: CYRIL MAUDE, VK3ZCK
2 Clarence St., Avondale Heights, Vic., 3034

Since the last issue went to print the VK6 two metre beacons have been heard on at least three occasions, but as yet no VK6 Amateur has been able to work the elusive VK6 on two metres, but it is reliably reported that VK6s have worked into Perth.

Other news is that Ray VK3KZK's two metre beacon has been taken over by the ZL1 and a SM7; the VK3 V.h.f. Group has a new committee; and at the time of typing these notes, the W.I.A. Federal Councillors are fighting it out at Canberra.

Hope to have more news for you next month. 73, Cyril VK3ZCK.

BEACONS

Addenda to the March 1969 list supplied by Brian VK5TN:

VK6VF/P—Albany. 144.300. VK6VF—Perth, 145.02 Mc.

VK5TN—Perth. 144.300 and 53.000 Mc. ZE1JZA—Rhodesia. 144.615 forward, 8-second key up, 35-second key down, 198 seconds of six call signs, and 280 seconds of key down.

Christchurch, New Zealand: Terry ZL1STAU states that the Christchurch two metre beacon is almost ready to go into service. The frequency is 145.000 Mc. and will be using a horizontally polarised antenna, omnidirectional and fed with about 20 watts of r.f. keying will be f.s.k. of 800 cycles and the call sign of ZL1STAU. (Reprinted from April Spectrum.)

VICTORIA

The March meeting of the V.h.f. Group coincided with the Group's annual general meeting and so much of the evening was devoted to the election of office-bearers for the forthcoming year. The results were as follows: Chairman, Gili VK2ZGS; Vice-Chairman, Neville VK3ZPN; Secretary, Noel VK3ZPU; QSL Manager, Bill VK3JAZ; Treasurer, Derek VK3ZUV; Publicity Officer, Peter VK3ZYO; Equipment Officer, Peter VK3KAV and Brian VK3ZCK.

A hearty welcome is extended to both Peter VK3ZYO and Derek VK3ZUV, who are newcomers to the V.h.f. Group Committee. A vote of thanks was extended to the retiring officers for the excellent work they have performed over the past twelve months.

Beacon Group—Latest news of the group is the planning of completely solid state equipment including the keyer. Construction is well under way and the group hope to have them operating on the air well before next summer.

6 Metres.—Activity in the metropolitan area on Sunday mornings (the only chance for a few hours peace on this band owing to the constant traffic on the highway) at Cheltenham (T.A.) is quite good with many new stations making contacts and the older ones just finding out that their gear still works. Brian VK3ZPU and JA3 JAT and JA8, a total of eight rare VK stations; also heard working them were VK4s and VK5s.

2 Metres.—Quite a number of newcomers are appearing on the band, while Ron VK3AKC

regularly works VK7WF and VK5ZKR. The only other reports of DX are that the VK6 2 m beacon has been heard on many occasions.

145 Mc.—Activity here is diminishing now that the Ross Hull Contest is over, but regulars appear quite frequently and a number of stations are building gear for this band. Maybe 432 will become more active than 2 metres. A.L.T. Report: VK5TN has almost completed a 440 Mc. a.t.v. rig and will soon be checking out the path to Geoff VK3AUX's Mt. Dandenong QTH and will be interested to hear from any Amateur interested in a.t.v. 73, Peter VK2ZGO.

Geelong.—Max VK3ZQY, of Geelong, reports that the 2 m band was really open on Saturday, 8th March, as he managed to work Max VK7MZ, Col VK7LZ, John VK7TN and Den VK7DK and with his MR3A, a ground plane, all right, his equipment, whilst doing a little bit of fishing. Also from Max there appears to be some strange signals on or about 147.85, the same signals can also be heard on 145.854 Mc.

DX RECORD, 2 METRES, 11,370 MILES

This was an earth-moon-earth QSO on 4th March, 1969, at 1756 GMT. John ZL1IAZ worked Kjell SMTBAE of Sweden. Gear used: ZL1IAZ—p.p. 4/400s (grounded grids and screens), zero bias class B linear and p.o. mod. 1000 Mc. D.M. 1000 Mc. 1000 Mc. into converter and 14 Mc. tunable if. Antenna: 96 element array made up of eight 6/6 slot fed yagis. SMTBAE—tx, 4CX250, 1500 watts antenna: 16 x 10 element yagis. Antenna: 150 elements. 144 Mc. 16 x 10 element yagis. (Reprinted from April Spectrum.) It is hoped that full details of this new record will be available later.



Rhodesian Beacon ZE1JZA

Back on the Air

AFRICA TO AUSTRALIA POSSIBLE ON TWO METRES

Since January 1968 a South Australian Amateur, VK5TN, has been attempting to analyse long range tropospheric propagation on two metres across the Great Australian Bight. This has been done by comparing the surface weather maps, together with the aerological sounding (temp-height) soundings used to check the magnitude of temperature inversions! available from the Bureau of Meteorology with the signal strength of the two metre beacons at Albany, Western Australia (VK6VF/P, on 144.500 Mc.).

Albany is particularly well situated for the experiments and in 1969, Amateurs in Albany, Adelaide and in the southern part of Australia have been noting the signals from VK6VF/P and VK5VF on about two days per week. On 3rd January, 1969, conditions were the best available and the Bureau of Meteorology contacted Wally VK5WG on two metres achieving the fourth such VK5-VK6 contact on two metres since it was first accomplished in 1951 by Clem VK5GL and Bob VK6BBO.

The advantages of using two metres compared to long range tropospheric propagation conditions, such as existed on 3rd Jan '69 are that the openings can usually be predicted from the surface weather chart a day or so in advance (propagation via the back edge of cold fronts is not an easy to predict).

This procedure has been noted by VK5ZDR as early as 1964 and had been recently revived by Brian VK5TN as a prelude to taking advantage of the large "high" Oceans that exists most of the time in the Southern Ocean. Predictions for the Indian Ocean region are made possible by the twice daily weather maps which cover most of the Southern Hemisphere. These maps are available at the Bureaux of Meteorology in each capital city, together with the aerological soundings for places such as capital cities and Carnarvon.

Inspection of the Indian Ocean weather maps since 1st Jan. '68 has shown that tropospheric propagation should be good between Carnarvon and Tasmania, Australia (formerly Madras) and about one day after the peak January through July and occasionally conditions will improve further south to enable v.h.f. tropospheric propagation between Perth and South Africa (especially in the vicinity of Rhodesia). Propagation to the east as far as South Australia could occasionally occur.

The announcement in the December 1967 issue of Electronics Australia, of the establishment of a Meteor Beacon Station ZE1JZA, together with information about the first long range tropospheric propagation in Jan. '68

and the existence of the Southern Hemisphere weather maps being realised, resulted in VK5TN commencing a programme of investigation to see whether the Indian Ocean could be spanned by v.h.f.u.h.f.

This programme of investigation has resulted in communications with the Radio Society of Rhodesia, which revealed that the beacon had been off the air from June 1968 to February 1969. The equipment, which was ZL1IAZ, had been repaired and put back into operation at its former site, 70 miles from Salisbury, Rhodesia, and the two metre transmission has been beamed to Australia from 1st March, 1969, 21.000 Mc. Continuous beacon operation has been promised up to September 1969, as requested, after which time the beacon operation may be concluded if there are no positive results.

Amateur Radio operators situated within, say 300 miles of the Indian Ocean, near Carnarvon and Perth are particularly requested to monitor the beacon which is identified in f.s.k. for 2 minutes, followed by unmodulated carrier, then retransmit the signal. The frequency is 144.015 Mc. only the 432 Mc. beacon is no longer on the air). The power output is 60 watts and the 16 element aerial beamed towards Australia has a gain of 15 db. over an isotropic. It is expected that the very high pressure region on the Indian Ocean extends from Africa to the Australian mainland, that signals received with a 12 db. gain two metre aerial should be available at a level of unity microvolts in South Australia and somewhat less in South Australia (condit. as looked good on 10th and 11th March).

Verification of tropospheric propagation over these long distances (up to 7,000 miles) will be undertaken by the present author and will be undertaken in various parts of the world in v.h.f. microwave propagation and meteorology. Mr. Brian Tideman, VK5TN, would welcome further enquiries, or African signal reports, 33 Carnarvon Ave., Kings Park, South Australia, 5004.

Note.—The extensive f.m. broadcasting network of stations in South Africa may prove useful as additional more powerful beacons. These operate every 86 Mc. from Channel 1 on 97.749 Mc. to Channel 234 on 107.642 Mc. (Durban North).

Information about suitable v.h.f. transmissions preferably close to 144 Mc. from Malaya/ Republic would be welcomed by VK5TN.



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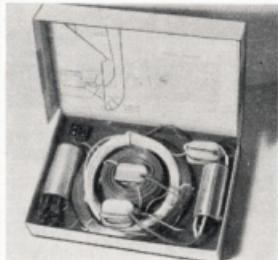
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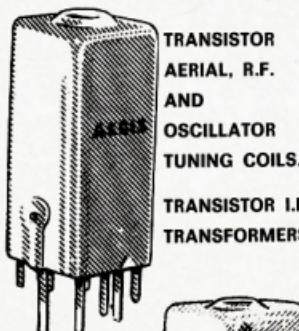


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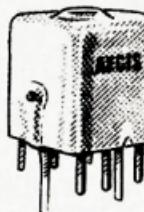
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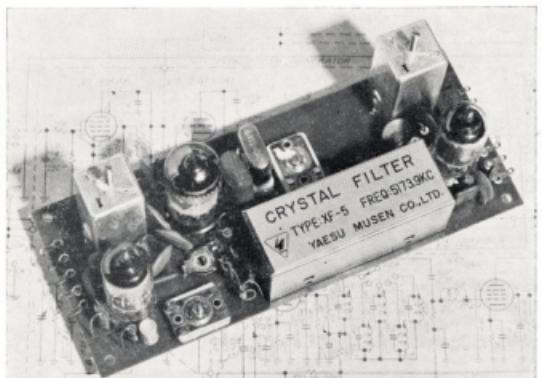
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Changes for Mobile Radiotelephone Services

Licensees of V.H.F. land and harbour mobile radiotelephone services, now operating in 30 kc/s channelling areas, are advised that if they have not already installed equipment which meets the Australian Post Office 30 kc/s channelling specification, they must do so before 30 June, 1969.

This requirement has been brought about by the growing demand for V.H.F. mobile radiotelephone services in city areas which is taxing the existing channels available. The change to 30 kc/s channelling will enable more radiotelephone services to be brought into operation as they are required.

However, some changes to existing equipment will be necessary and the following programme for conversion, which is designed to cause the least inconvenience to all concerned, has been adopted:—

As from 30 June, 1969, licensees of V.H.F. mobile radiotelephone services operating in 30 kc/s channelling areas within the frequency bands 70-85 Mc/s and 156-174 Mc/s* will be required to make necessary changes so that:—

- (i) All base station transmitter/receivers (both amplitude and angle modulated) employed in a base station installation shall be of a type complying with the relative Post Office specification and approved for 30 kc/s operation and shall be operated in accordance with the terms of that specification.
- (ii) All angle modulated mobile transmitters shall be adjusted to function with a maximum deviation of ± 5 kc/s.

*This excludes the International Maritime Mobile V.H.F. Radiotelephone and the existing Australian Post Office Subscriber Services.

Early conversion will assist manufacturers in meeting delivery dates for equipment.

**FURTHER DETAILS MAY BE OBTAINED FROM THE SUPERINTENDENT,
RADIO BRANCH, G.P.O., IN YOUR CAPITAL CITY.**

AUSTRALIAN POST OFFICE

PRT3.64.39

TRIO TR2E 2 METRE TRANSCEIVER

- Triple conversion receiver with crystal locked 2nd and 3rd oscillators for maximum selectivity and sensitivity.
- Separate VFO tuning for both receiver and transmitter.
- Nuvistor RF amplifier.
- Provision for crystal locking of the transmitter.
- 12 volts DC (internal transistor power supply) and 230/240 volts AC operation.
- Noise limiter and squelch.
- 17 tubes, 4 transistors and 7 diodes.
- 1 microvolt sensitivity for 10 dB. S/N ratio at 146 Mc.
- "S" meter, RF output meter, and "netting" control.

Price: \$282.00

MILLER 8903B PRE-WIRED I.F. STRIPS

455 Kc. centre frequency, 55 db. gain, uses two PNP transistors and diode detector. Bandwidth 5 Kc. at 6 db. DC requirements: 6 volts at 2 mA.

Price: \$9.70

Plus pack and post 25 cents

VALVE SPECIALS

ATS25 ceramic base 807, 70c or three for \$2.

815, 70c.

6AC7, 20c or 12 for \$2.

6J6, 30c or 7 for \$2.

6CO6, 20c or 6 for \$1.

VR150/30, 75c or 3 for \$2.

QB2/250 (813), new and boxed, \$7 ea.

6H6 metal, 20c each.

DM71 indicator tube, 40c ea. or 6 for \$2.

6F33, 30c ea.

RESISTORS

Mixed Values

\$2 per 100

plus postage 20 cents

CAPACITORS

Mixed Values

80 for \$2

plus postage 20 cents

STAR ST-700 TRANSMITTER

SSB — AM — CW

80 Metres to 10 Metres

- Ultra-precision three-stage double gear tuning mechanism, completely free of backlash, spreads each 600 Kc. over 1.68 metres with 1 Kc. dial calibrations.
- Stability better than 100 cycles. "Vackar" type VFO. Voltage regulated power supply.
- Uses mechanical filter at 455 Kc. specially designed for SSB. Selectable upper or lower sideband. Carrier and sideband suppression 50 db. or more.
- May be connected with STAR SR-700A receiver for transceive operation.
- Fully adjustable VOX and ANTITRIP circuits for automatic transmission/reception.
- Press-to-talk relay, break-in keying and sidetone oscillator for CW monitoring.
- Automatic level control circuit assures high quality distortion free SSB.
- Built-in antenna relay.
- Final stage uses two 6146s in parallel with conservatively rated input of 250 watts PEP on SSB and CW, 100 watts on AM.
- Built-in heavy duty power supply with adequate reserve margin assures trouble-free operation.
- Power supply 220 to 240 volts AC 50 cycles.

Price: \$519.50

CARBON POTS

20 cents ea.

WIRE-WOUND POTS

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3000 TYPE RELAYS

large range

Only 50 cents ea.

VACUUM SEALED RELAYS

mainly 24 volts

50 cents ea.

TRANSISTORISED

COMPUTER BOARDS

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FULL RANGE OF MULTIMETERS

STAR SR-700A RECEIVER

SSB — AM — CW

- Ultra-precision three-stage double gear tuning mechanism, completely free of backlash, spreads each 600 Kc. over 1.68 metres with 1 Kc. dial calibration.
- Stability better than 100 cycles. "Vackar" type VFO. Voltage regulated power supply.
- Triple conversion. If's 1650 Kc. and 55 Kc. First and third oscillators crystal controlled.
- Imaging ratio better than 60 db. on all bands. Beat interference below noise level.
- Variable selectivity band pass filter at 55 Kc. provides steep cut offs and a good shape factor. Four positions: 0.5, 1.2, 2.5 and 4 Kc. (at 6 db. down).
- T-notch filter provides better than 50 db. attenuation.
- Variable decay AGC. Variable BFO tuning.
- Output terminal on VFO for transceive operation.
- Product detector for SSB/CW. Diode detector for AM.
- Noise limiter with adjustable clipping level operates on AM, SSB and CW.
- Built-in 100 Kc. crystal calibrator (crystal included). Zero adjustment on VFO.
- Sensitivity better than 0.5 uV. for 10 db. S + N ratio on SSB and CW, better than 1 uV. on AM.
- Power output, 1 watt. Impedance, 4 ohms.
- 13 tubes, 6 diodes.

Price: \$461.50

MARCONI TF885A VIDEO OSCILLATOR

Price: \$120

SANSEI SE405 S.W.R. BRIDGE

1 Mc. to 150 Mc., also doubles as a Field Strength Meter

Price: \$21 inc. tax

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- ★ OVERLOAD PROTECTION.
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D.C. Current: 0-12 uA., 300 uA., 6 mA.,
600 mA., and 12 A.
A.C. Current: 0-12 A.

Ohms: 0-20 megohms in four ranges.

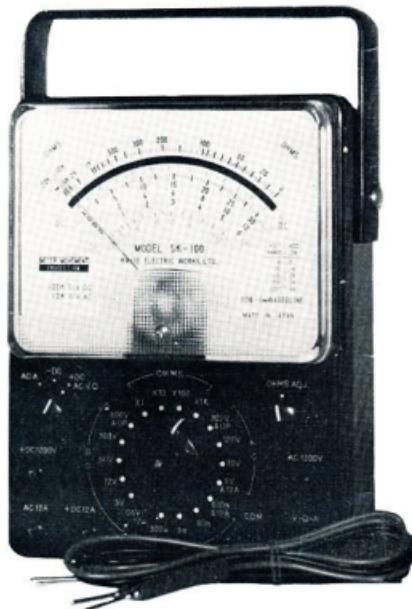
Centre Scale Reading: 150, 1.5K 15K, and
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DB.: -20 to +17. 0 db. = 1 mW. in 600
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Weight: 2 1/2lb. Size: 7" h. x 5 1/2" w. x 2 1/2" d.

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